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Weiner and Associates, Denver, Colo

Prepared for

Environmental Protection Agency, Denver, Colo Region VIII

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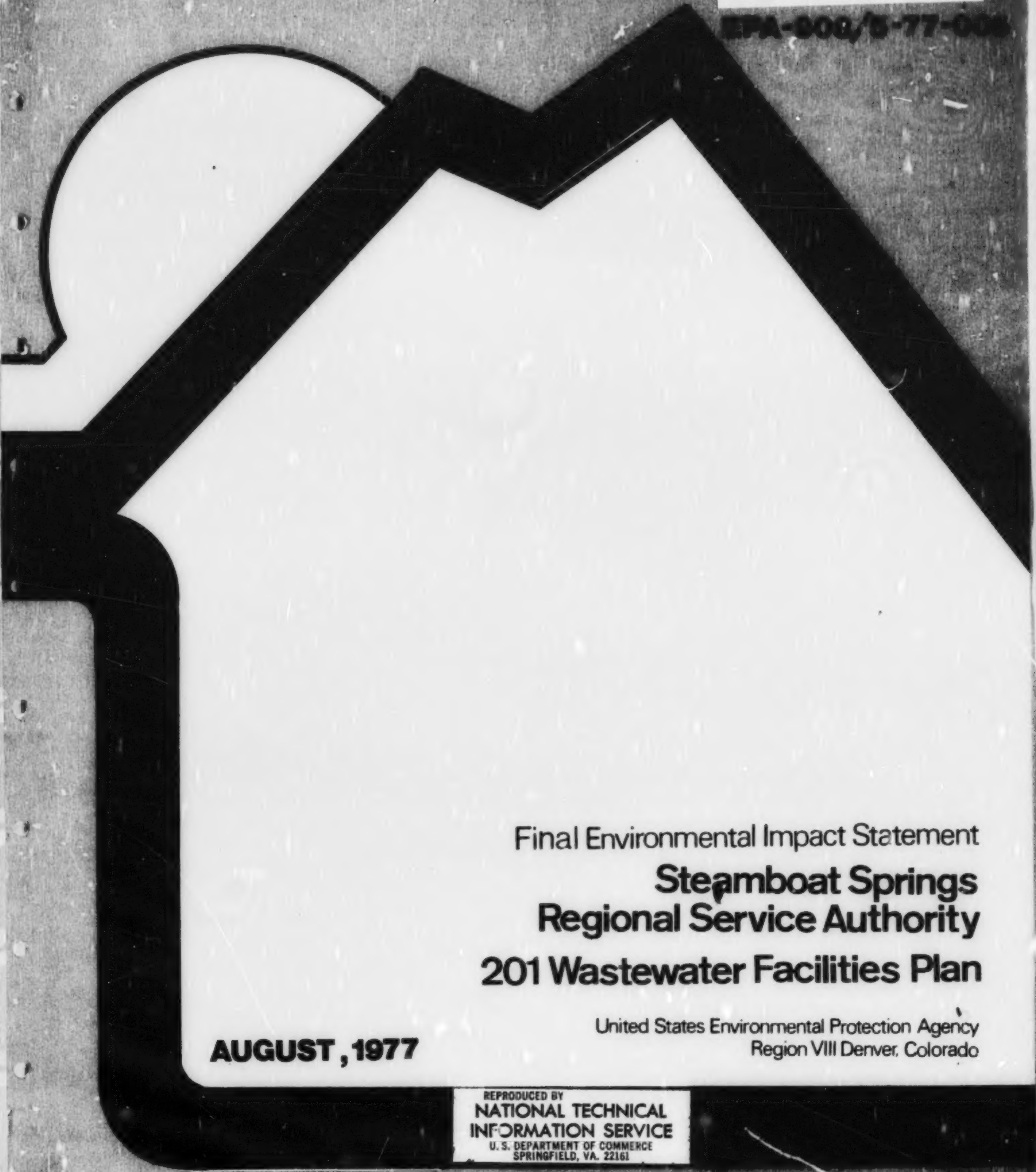

Final Environmental Impact Statement

Steamboat Springs Regional Service Authority

201 Wastewater Facilities Plan

United States Environmental Protection Agency
Region VIII Denver, Colorado

AUGUST, 1977

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16. ABSTRACT

This is a final environmental impact statement (EIS) for proposed construction of additional wastewater treatment facilities at Steamboat Springs, within Routt County, Colorado. The U.S. Environmental Protection Agency (EPA), Region VIII, Denver, under the authority of Section 201 of the Federal Water Pollution Control Act Amendments of 1972, is authorized to grant 75 percent matching funds for construction costs of designated wastewater treatment facilities. Sewage discharges as a result of area growth and development together with non-point source runoff and irrigation return flows have degraded the water quality of the Yampa River and its tributaries. Therefor, both additional sewage treatment facilities and non-point source controls are needed to meet water quality goals.

The recommended action is to construct a sewage treatment plant 2 miles downstream of the existing lagoon system. The new plant will combine 5 separate districts into a regional system. Tertiary treatment is required to meet water quality goals and will be accomplished through a combination of in-plant treatment and summer time sewage irrigation.

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Final Environmental Impact Statement

Steamboat Springs Regional Service Authority

201 Wastewater Facilities Plan

United States Environmental Protection Agency
Region VIII, Denver, Colorado

John A. Green
JOHN A. GREEN
Regional Administrator

August 26, 1977
Date

Prepared By:
Weiner & Associates, Denver, Colorado

ia'

SUMMARY SHEET
Environmental Impact Statement

( ) DRAFT

(X) FINAL

Prepared for the U.S. Environmental Protection Agency, Rocky Mountain-Prairie Region, Region VIII, Denver, Colorado, through a contract with Weiner & Associates, Inc., Denver, Colorado.

A. Type of Action: Administrative (X) Legislative ( )

B. Brief Description of Proposal

The Region VIII Administrator of the U. S. Environmental Protection Agency intends to provide federal matching funds for regional wastewater treatment in the Steamboat Springs region through the authority of the Water Pollution Control Act (as amended, 1972). The purpose of this final Environmental Impact Statement (EIS), required of federal agencies by the National Environmental Policy Act (NEPA, 1969) is to notify governmental agencies and the public at large of this impending project with potential environmental ramifications.

The principal river drainage is the Yampa River which has good chemical water quality and poor to fair habitat for aquatic life. This latter condition may be due to upstream bank erosion, nonpoint runoff, irrigation return flows, sewage effluent and the removal of natural streamside vegetation. This project is intended to consolidate the five existing point sources of sewage effluent into one plant, designed to achieve stated water quality goals.

C. Alternatives Considered

The final treatment alternatives combine the existing point sources and can be divided into four action and one no-action options. The action alternatives involve two sites and two tertiary, or advanced, treatment choices. Plant site options include use of the existing city lagoon site or a new location two miles west of the city lagoons. Tertiary treatment is necessary to control suspended solids as well as ammonia and chlorine residual. Two alternatives exist for this purpose; one involves use of inplant processes (advanced biological and dual-media filtration); while the other applies 40 percent of the disinfected secondary effluent to a designated site during summer months when ammonia levels become toxic to aquatic life. The latter approach uses the land as a natural filter in a controlled program to achieve tertiary treatment.

A third site, ten miles downvalley, was considered in conjunction with year-round land treatment. This alternative was rejected midway through the planning process because it was feared that it would encourage growth inconsistent with citizen desires and the draft County Comprehensive Plan. In addition, this approach eliminates the growth constraints of the waste load allocations of the discharge permits.

D. Environmental Impacts

A summertime land treatment program (Alternatives II and IV), allows the productive use of nutrient laden water which increases crop yield; does not require large storage reservoirs (a citizen objection); and retains the growth management aspects of the discharge permits. It would involve applying 40 percent of the effluent to the land during the irrigation season, while the remaining 60 percent and all of the wintertime flows would be treated in plant. This plan is designed to meet the required water quality goals.

The new plant site (Midway) offers gravity flow from almost all developed areas and offers a land buffer from existing or planned structures. It is consistent with planning goals and sound land use criteria. The present lagoon site is less desirable because it is near existing residences, in an area slated for more development and is in the 100 year floodplan. In addition, this site would require extensive pumping from downvalley areas. It was determined that the Midway site in conjunction with summertime land treatment would help assure the continued use of land for agricultural purposes and enhance its productivity, a stated citizen goal. Finally, the Midway site with land treatment (Alternative IV) is also found to be the most cost-effective choice.

The plan just decribed is a result of a compromise solution that was developed on June 22, 1977. The solution received the unanimous approval of the Steamboat Springs City Council and the Routt County Board of County Commissioners.

E. Distribution

The draft EIS is being provided to the following:

Local agencies:

- Routt County Regional Planning Commission
- Routt County Board of Commissioners
- Routt County Environmental Health Department
- Steamboat Springs Planning Commission
- Northwest Colorado Council of Governments
- Member Entities: Steamboat Springs Regional Services Authority
  - City of Steamboat Springs
  - Mt. Werner Water and Sanitation District
  - Riverside Water and Sanitation District
  - West Steamboat Water and Sanitation District
  - Fish Creek Water and Sanitation District
  - Tree Haus Water and Sanitation District
  - Steamboat II Water and Sanitation District
  - KOA Campground Development
  - Sleepy Bear Development

- Citizen Advisory Committee Members

- Steamboat Springs Public Works Committee

State agencies:

- State Clearinghouse/Division of Planning
  - Colorado Water Pollution Control Division
  - Colorado Air Pollution Control Division
  - Colorado State Board of Land Commissioners
  - Colorado State Land Use Commission
  - Colorado Division of Highways
  - Colorado Division of Wildlife
  - Colorado Department of Natural Resources/Water Resources Division
  - Colorado Historical Society
  - Public Utilities Commission

Federal agencies:

- Forest Service (Routt National Forest & Regional)
- Federal Highway Administration
- U.S. Bureau of Reclamation
- Bureau of Outdoor Recreation
- U.S. Fish and Wildlife Service
- Bureau of Land Management
- Field representative, Office of the Secretary of Interior
- Soil Conservation Service (local and regional offices)
- U.S. Geological Survey
- Economic Development Administration
- U.S. Senators Hart and Haskell
- U.S. Representatives Armstrong, Evans, Johnson, Schroeder, Wirth
- Federal Energy Office
- U.S. Public Health Service
- U.S. Department of Housing and Urban Development

Others:

- Colorado Open Space Council, Inc.
- Trout Unlimited
- National Wildlife Federation
- Rocky Mountain Center on Environment
- Wright-McLaughlin Engineers
- Denver Post
- Rocky Mountain News
- Steamboat Pilot
- Charles Gathers and Associates
- Special Districts Association of Colorado
- Steamboat Ski Area
- Colorado Ute Electric Association
- Colorado Municipal League

G. Acknowledgements:

EPA wishes to thank those individuals who devoted considerable time and knowledge into achieving this plan for a new sewage treatment system for Steamboat Springs. The skills necessary to accomplish this often difficult task included persons knowledgeable in engineering, biology, law, geology, city, county, state and federal administration, the art of compromise as well as the knowledge of the goals and desires of the citizens of Steamboat Springs. EPA particularly wishes to congratulate the following individuals who were most influential in accomplishing this plan: Mike Uberauga, Jim Bubb and Brac Melton - City Staff of Steamboat Springs; Don Barrett - City Council President; "Doc" Utterbach - Chairman of the Routt County Board of Commissioners; Ken Wright and Bill Taggart of Wright-McLaughlin Engineers; John Fetcher of Mt. Werner Water and Sanitation District; Steve Weiner and Ron Pifer of Weiner and Associates; and the concerned citizens of Steamboat Springs.

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I. Summary

This is a summary of the final environmental impact statement (EIS) for proposed construction of additional wastewater treatment facilities at Steamboat Springs, within Routt County, (Figure 1A), Colorado. The National Environmental Policy Act (NEPA, 1969), requires preparation of an EIS whenever federal funds or land are considered for projects with potentially significant environmental impacts. The U. S. Environmental Protection Agency (EPA), under the authority of Section 201 of the Federal Water Pollution Control Act Amendments of 1972, is authorized to grant matching funds for construction costs of designated wastewater treatment facilities. This final EIS is the result of this decision and included circulation of a draft EIS for comment to other federal, state, and local government agencies as well as citizen groups, individuals, and the news media.

The Act, together with state legislation, has resulted in the establishment of water quality standards for streams and discharge sources. Discharge permits issued by the Colorado Water Quality Control Division for the five existing sewage plants in the Steamboat Springs area will require any new facilities in the area to control ammonia, suspended solids and residual chlorine. In addition, discharge of organic matter (biological oxygen demand-BOD), fecal coliform (bacteria), pH, grease and oil must remain in compliance, thus necessitating cost-effective expansion of present facilities. To aid municipalities in complying with the water quality regulations, the Federal Act provides matching funds for facility construction at a rate of 75 percent. The remaining 25 percent must be paid by local entities, plus all annual operation and maintenance costs.

THE EIS ROLE

An impact statement allows the lead federal agency, in this case EPA, to include all environmental considerations into the new facilities design and to provide opportunity for citizen participation. This EIS identifies potential environmental, social, and economic impacts of the proposed projects. It presents issues that were determined during the preparation of the EIS and 201 Facilities Plans (design engineer's report). Methods used to resolve these issues are explained as well as a summary of engineering alternatives proposed to achieve agency requirements. The proposed alternatives and recommended action are then evaluated in terms of environmental impacts.

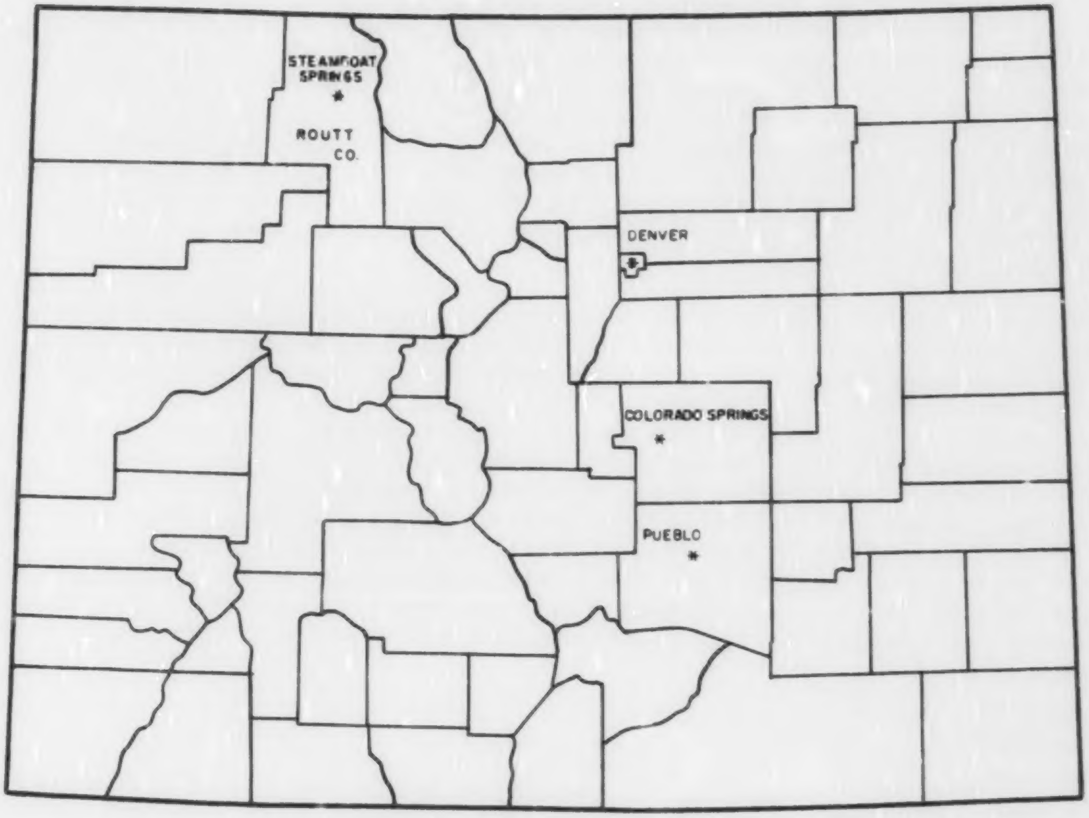
STEAMBOAT SPRINGS
ROUTT CO.
DENVER
COLORADO SPRINGS
PUEBLO

FIGURE 1A

Why Additional Wastewater Treatment Facilities?

The following conclusions are based on the detailed engineering report entitled "Steamboat Springs Wastewater Management Report", June 30, 1977 prepared by Wright-McLaughlin Engineers, Denver, Colorado.

The Yampa River is the principal drainage of the study area shown in Figure 1. Sewage discharges as a result of area growth and development together with non-point source runoff and irrigation return flows have partially degraded this river and its tributaries.

Area Water Quality

The general water quality of the Yampa River in the study area can be characterized as fair. It has occassionally violated the state's standards for B_1 streams and has been degraded frequently by siltation. These factors have contributed to an ecological environment that has a poor to fair standing crop of bottom insects and a poor standing crop of game fish.

The total output of pollution from non-point sources has been estimated by Wright-McLaughlin Engineers (Oct., 1975). Their prediction indicates that by 1985 runoff would contribute 3.5 more suspended solids and 0.55 more organic matter (BOD) than the combined effluent output from the five existing sewage plants within the study area.

Section 201 of the Act previously cited states that Facilities Plans shall, "...provide control of treatment of all point and non-point sources of pollution,...". However no structural alternatives have been proposed for non-point sources because grant funds are limited and Section 208 authorizes specific study of these sources which are yet to be completed.[1] Therefore, it is felt that proposal of structural options would be premature. As a result, the Facilities Plan describes only non-structural (policy) recommendations to control non-point sources of pollution. Point sources (sewage effluent) are to be controlled by the construction of a wastewater treatment facility.

Existing Sewage Discharges

Study May 1 shows the five point sources currently discharging treated sewage effluent into the Yampa. These sources are summarized as follows:

Source	System Type	Entities Served
Mt. Werner	aerated lagoon	Mt. Werner Water and Sanitation District, Tree Haus District

---

[1] The Northwest Colorado Council of Governments 208 Areawide Wastewater Management Plan is expected to be completed by May, 1978.

Source	System Type	Entities Served
City of Steamboat Springs	aerated lagoon	City of Steamboat Springs. Fish Creek Water and Sanitation District, West Steamboat Water and Sanitation District, Riverside Water and Sanitation District, and Mt. Werner Bypass
KOA	package plant	KOA Campground--private system
Sleepy Bear	package plant	Sleepy Bear Mobile Home Park--private system
Steamboat II	package plant	Steamboat II Water and Sanitation District

Water Quality Goals

In 1974, the Colorado Department of Health released the "Water Quality Management Plan for the Green River Basin" which included the Yampa River Basin and recommended plant discharge limits known as waste load allocations. These recommendations were incorporated into Discharge Permits now administered by the State. Table I compares the 1977 permit requirements and ultimate design criteria approved by EPA and the Colorado Department of Health to present point source discharges. All five sources are in violation of these standards; however, a better record of compliance could be achieved if better management could be exercised over the existing operations. If existing line inflow and infiltration problems are reduced, the exisiting facilities still would be inadequate to handle the required treatment.

Compliance with water quality discharge standards will require additional factilities for organic matter (Biological Oxygen Demand-BOD) and suspended solids. EPA has also urged the SSRSA and Wright-McLaughlin to develop design limits for ammonia and residual chlorine. These latter two controls are based on their respective toxicity to fresh water aquatic life as recommended in Quality Criteria For Water (EPA, 1976). Discharge Permits will be updated in the future to include these parameters (See Chaper II) where water quality of the receiving streams indicates they are necessary.

Treatment capacity will be enlarged in phases consistent with actual population growth and reduction achieved in inflow and infiltration. The population projections developed for this EIS were used by Wright-McLaughlin to estimate construction phases over a 20-year planning period in order to determine necessary plant site areas and to conduct a cost-benefit analysis of these alternatives.

Table 1

SSRSA Plant Discharges

	1975 Discharge[1]	1977 Permit Limits[2]	1983 Design Criteria[3]
BOD_5	313 to 664 lb/day	238 lbs/day or 85% removal	238 lbs/day or 10 mg/l
Suspended Solids	11 to 120 mg/l	85% removal	10 mg/l
Fecal Coliform	500 to 280,000 per 100 ml	Variable, maintain stream concentration below 1000/100 ml	Variable, maintain stream concentration below 1000/100 ml
Residual Chlorine	--	Unknown	less than .02 mg/l
Ammonia (NH_3-N)	0.08 to 18.0 mg/l	Unknown	Seasonal (5 to 9 mg/l)
pH	7.1 to 8.8	6.0 to 9.0	6.5 to 8.5
Flow	1.71 to 2.24 mgd	--	1.62 mgd[4] (1985)

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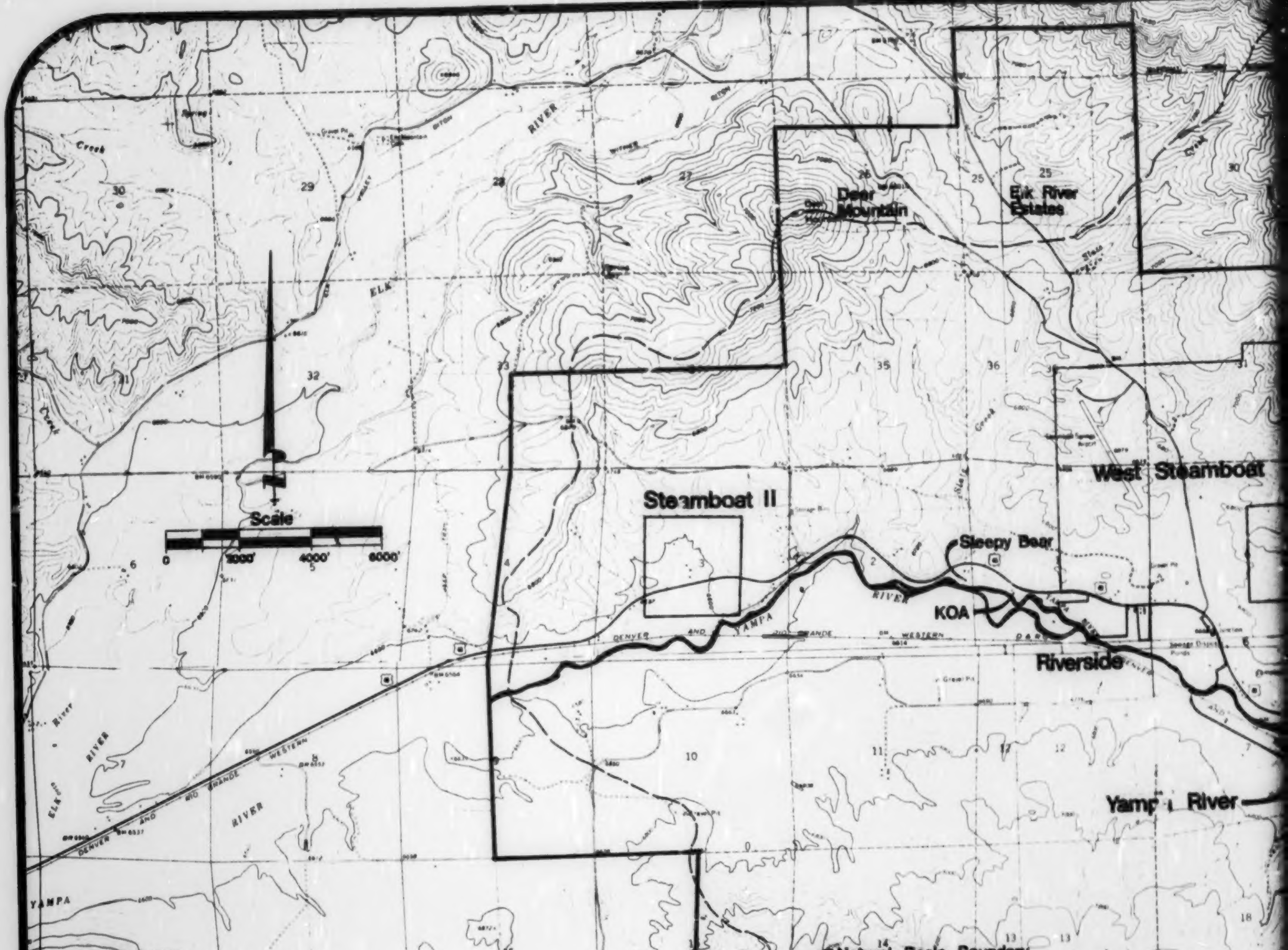
[1] Based on data from Table VII except for suspended solids, which comes from Table IX.

[2] Effective July 1, 1977.

[3] Approved by EPA and the Colorado Department of Health

[4] Reflects reduction in Inflow and Infiltration


Deer Mountain
Elk River Estates
West Steamboat
Steamboat II
Scale
0
2000'
4000'
6000'
Sleepy Bear
KOA
Riverside
Yamp i River
Natural Basin Boundary
ELK RIVER
YAMPA RIVER
DENVER AND RIO GRANDE WESTERN
Quarry Mountain

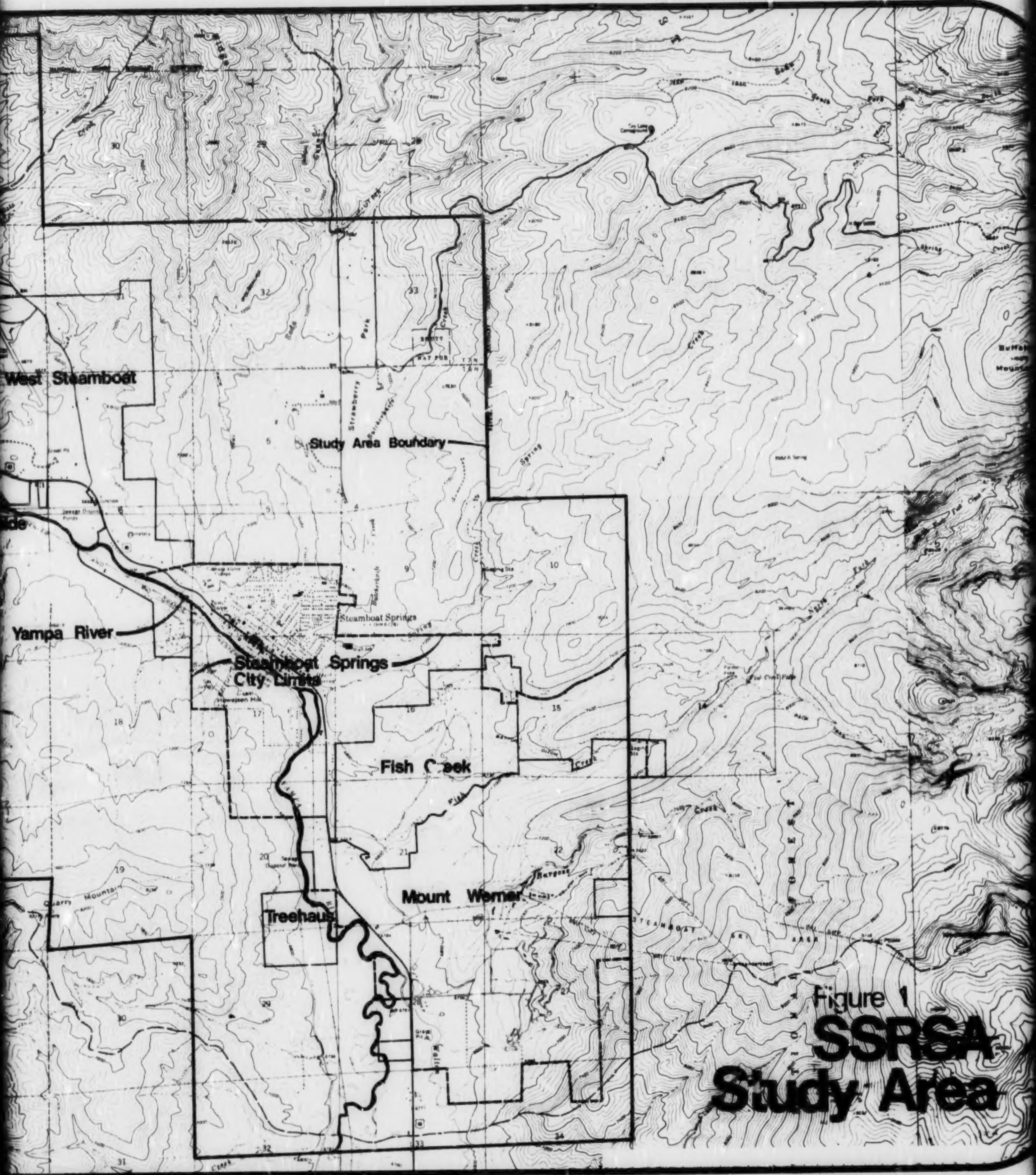


Figure 1
SSRSA
Study Area

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Proposed Alternatives

Chapter V describes the proposed treatment alternatives recommended by Wright-McLaughlin in the Facilities Plan. All treatment alternatives combine the existing five point source into one plant for treatment. These alternatives can be divided into four action, one sub-alternative and one no-action option. The action alternatives involve two sites and two tertiary, or advanced, treatment choices.

An outfall presently links the Mt. Werner and Steamboat Springs plants. However, all alternatives require that an additional line be constructed between the city proper and its lagoons. This would parallel the existing Steamboat Springs outfall thus providing needed additional capacity. The Mt. Werner plant will be used for flow leveling also in conjunction with all proposed alternatives.

The proposed alternatives are summarized as follows:

Alternative I includes all primary, secondary and tertiary treatment in-plant at the existing Steamboat Springs sewage lagoons. Sewage would have to be pumped from the Steamboat II, Sleepy Bear, KOA, and Riverside residential areas.

Alternative II employs the same site to treat the wastewater to secondary levels and then applies the disinfected effluent to the land during the summer. The remainder of the year the effluent would be treated to tertiary levels at the existing site and discharged to the Yampa River. This process will control ammonia during summer months when levels become toxic to stream aquatic life due to high water temperature and low flow. Operations during the non-irrigation period would involve all in-plant processes, including multi-media filtration to control BOD and suspended solids.

Alternative III, like Alternative I, utilizes only in-plant processes at the Midway site shown in Figure 2. Facilities at this site would be built in phases in order to utilize the existing facilities. A new outfall would join the Steamboat Springs lagoons with Midway, ultimately retiring the existing lagoons around 1987. A slight amount of pumping would be required from Steamboat II, KOA and Sleepy Bear.

Alternative IV is the summertime land treatment variation similiar to Alternative II with the plant located at Midway. Construction would be phased in a fashion similiar to Alternative III. However under this alternative only 40 percent of the summer-time effluent would be applied to the land with the remainder of the effluent treated to tertiary levels at the Midway site

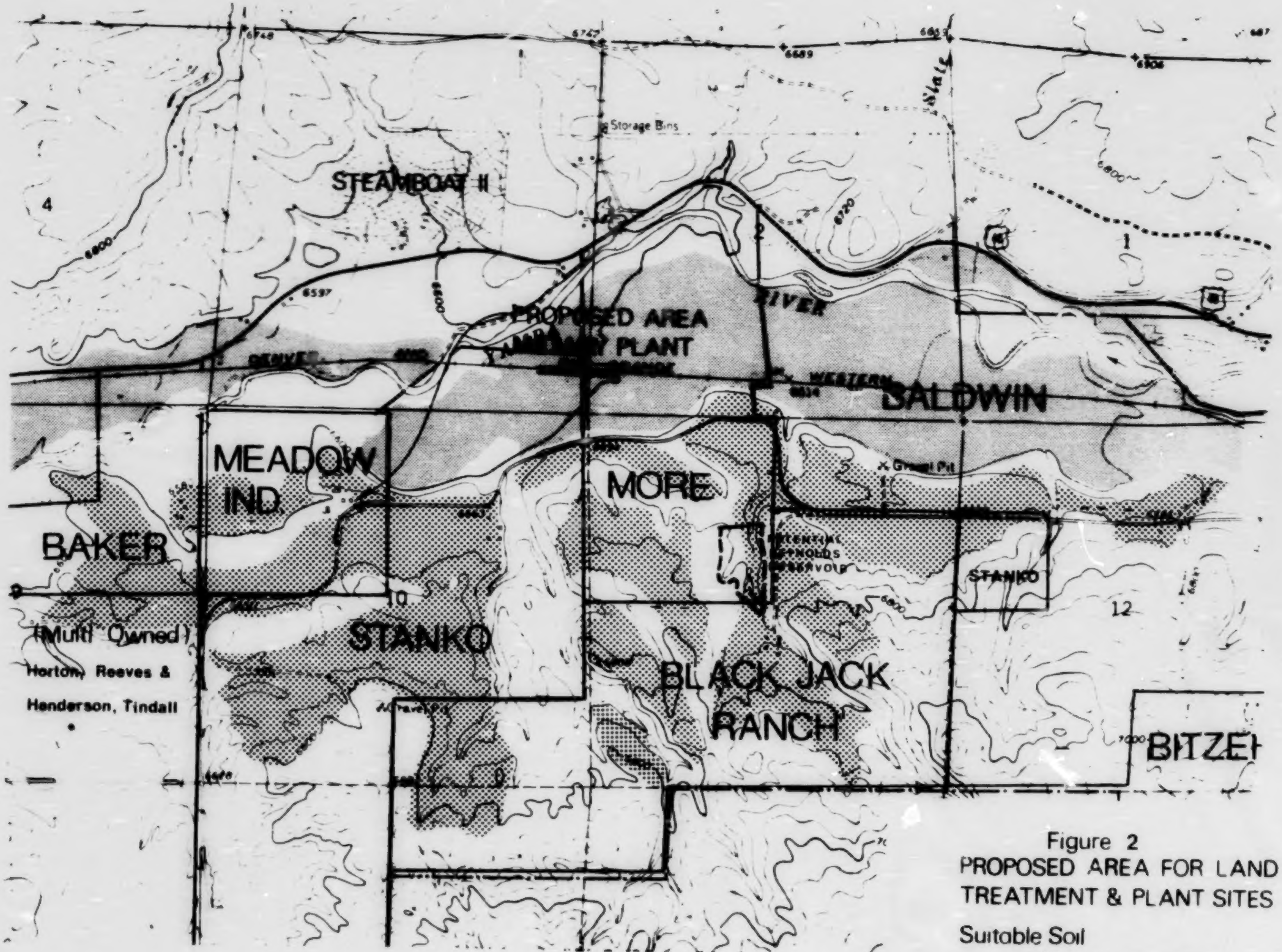

Figure 2
PROPOSED AREA FOR LAND
TREATMENT & PLANT SITES

Suitable Soil

▨ VALLEY BOTTOM
▨ UPPER TERRACE

Area of proposed Midway Plant and land treatment sites
(looking east, ski area in background)

Finally, there is the no-action alternative which would leave the five point sources as is, thus not providing for future growth and allow continued violation of water quality standards.

Until recently, the locations under consideration also included a western site just east of the confluence of the Elk and Yampa Rivers. This site offered gravity flow from all portions of the study area except those subdivisions north of the airport which would have to be pumped for all alternatives. It also offered compatability with a land treatment program for accumulated secondary effluent from year-round flow (classical land treatment). This concept would require winter effluent storage in constructed reservoirs and land application during summer months. The western site was subsequently rejected because it was feared that it would readily facilitate growth inconsistent with citizen desires and the unadopted Comprehensive Plan. In addition, a year-round flow, land treatment program eliminates the constraints of the Discharge Permits. These permits specify allowable effluent concentrations which can be discharged to a receiving body of water. The specified limits consider the loading capability of the river in pounds per day (waste load allocation) and, through a given treatment technology, can be translated back to a design flow, hence service area population. In this sense, Steamboat Springs officials and EPA feel that Discharge Permits are tangible growth management tools.

A classical land treatment program, without direct discharge to the river, would open up the area's allocation. Theoretically, a proposed development inconsistant with land use goals, could construct its own sewage system and use the available allocations. The costs of such a system, designed to meet standards, would make such an event unlikely; however, the potential exists.

Facilities Plan

This EIS does not repeat all technical information presented in the Facilities Plans prepared by the design engineer, Wright-McLaughlin Engineers of Denver. The reader may wish to review the plan concurrent with this EIS. A Facilities Plan, as required by the Act, sets out preliminary engineering criteria, alternatives and recommendations, analysis of sewer line inflow and infiltration problems, and presents a cost-effective analysis of the alternatives proposed to meet applicable standards.

Discussion of environmental, social, and economic issues differentiates between those identified initially but resolved during the planning and EIS processes; those that remained unresolved in the draft EIS; and those remaining in this final EIS. Discussion of issues is presented according to their relationship to wastewater treatment.

Evaluation of Proposed Alternatives

Representatives of the EPA, State Health Department, City of Steamboat Springs, Routt County, Wright-McLaughlin, Weiner & Associates, and two citizens committees met often to discuss these alternatives. Opinion varied dramatically, as some favored purely gravity flow systems, while others saw growth management capability in a gravity flow/forced main system. Both extremes have sound reasons for treatment plant location. Opinion also varied on tertiary methods with some questioning the feasibility of land treatment in a sub-alpine climate.

Treatment Options

A partial summertime land treatment program, (Alternative II and IV), allows the productive use of nutrient laden water which increases crop yield; does not require large storage reservoirs (another citizen objection); and retains the growth management aspects of the Discharge Permits.[1] Irrigation, in this sense, would be construed as controlled discharge of effluent by surface spreading to support plant growth and to treat wastewater. Thus, instead of removing various constituents like nitrogen and phosphorus, they would be beneficially utilized by the crops. The land application technique uses the land and its associated biosystem as a living filter medium. Treatment is accomplished by a combination of physical, chemical and biological means, as the applied wastewater seeps into the soil. Many of the impurities that are entrapped in the soil are eventually used by the higher plants as a growth component and the wastewater receives the equivalent to tertiary treatment.

The success of such a program is highly dependent upon effluent application rates, proper management, and appropriate site conditions. Much of the area shown in Figure 2 provides acceptable soil conditions compatible with a proposed application rate of 29 inches per year. The growing season in the proposed area is 90 - 100 days which is compatible with a summertime land treatment program. Therefore climate is not an obstacle to this tertiary process. Although in-plant processes are environmentally acceptable, a properly designed and managed summertime land treatment program has numerous advantages; therefore, EPA recommends the approach of Alternatives II and IV for the Steamboat Springs study area. It should also be noted that all action alternatives would improve the water quality and therefore are considered to be beneficial to the several endangered species of fish in the lower Yampa River Basin.

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[1] Permits specify pounds per day with no credit given for summer when there is no direct discharge.

Plant Site Options

Plant site selection is a major decision affecting land use in the study area. At the existing site, adjacent new plant construction would be in the 100-year flood plain. Besides the flood hazard to new facilities which requires flood proofing, such construction would restrict the flood flow and slightly raise the flood height upstream, potentially effecting nearby structures. The present site is in an area that is already developed to a limited extent and, on 1995 land-use maps, is slated for heavier development. Should the land immediately surrounding the existing site turn out to be densely populated, as planned, problems are likely to develop. The history of sewer plants in populated areas is not very good since people have an almost instinctive reaction against such facilities. Also, there are the practical concerns for noise and odor.

The Midway Site is proposed in an area that the draft Comprehensive Plan and citizens alike agree should remain agricultural. This site would convert a relatively small parcel of agricultural land (approximately 20 acres); however, its close proximity to a summertime land treatment site makes this a desirable location. In addition, this site will be located outside the 100-year flood plain, unlike the present lagoons, and would only require a small amount of pumping from Steamboat II, KOA and Sleepy Bear.

In summary, the present lagoons should be used for the short-term to utilize their potential, but the new Midway Site is preferable in the long run. It would allow a partial land treatment program to occur nearby and would help assure the continued use of land for agricultural purposes, a stated citizen goal.

Initial Concerns

This EIS effort began with the development of an "issues paper" which identified environmental factors to be investigated for their relationship to the projects being considered. Those preliminary issues included in the following topics:

- Surface water and groundwater quality;
- Impact of area point and non-point discharges and future demand for sewage treatment service;
- Secondary impacts, if any, including growth encouragement and its impact on air quality, noise, traffic, land use, public sentiment, etc.;

- Land use and environmental impacts if new plant sites and interceptor sewers are needed;
- Impact on historical/archaeological sites;
- Odor and noise;
- Sludge disposal;
- Economic impact on districts; and
- Flood plains and other geologic factors.

Preservation and enhancement of surface and groundwater quality is the expressed goal of the Federal Water Pollution Control Act. The intent of Section 201 of the Act is to control point and non-point sources and this control remains the principal issue of the EIS.

Issues

The draft EIS, published in June 1976 identified the following issues to be resolved in this final statement:

Financial Condition of the Districts

Six organized water and sanitation districts exist in the 201 study area. The City of Steamboat Springs provides all sewage treatment for four of these districts and partial for one more (Mt. Werner) while the Steamboat II district and the private entities (Sleepy Bear and KOA) have their own "package" plants. Several districts of the SSRSA have existing bond indebtedness which have repayment schedules that call for increasingly larger payments with time, known as ballooned payments. This assumed a growth rate which has not occurred so that projected revenues are not being realized. As a result, these districts are in poor financial condition hardpressed to meet current debt obligations and little hope of contributing their proportional share of 201 capital costs. The draft EIS left the unresolved question "Who is going to pay the local share of capital costs?"

In order to answer this question a study was prepared during the Fall of 1976 which investigated the legal and financial options that would assure sound local funding. This report was issued in December 1976 and is repeated in Chapter III. Three financial alternatives were found including:

A) The city assumes all debt obligations through general obligation bonds and recovers the out-of-city share through increased service fees;

B) A County Wastewater System where the county assumes the out-of-city share of the debt and contracts with the city for treatment; and

C) Formation of an umbrella Metropolitan Sewage Disposal District which would transfer control and responsibility of the regional treatment system to a regional district board who would issue revenue bonds.

In a series of joint meetings it was decided that alternate B, County Wastewater System would be implemented with the creation of a special advisory board of directors. Formation of this contractual arrangement between the city and county has not formally taken place, but must be completed prior to approval of Step III grant funds by EPA and the State of Colorado.

Cost of Program

Of the four alternatives previously described, the city and other members of the SSRSA narrowed the choice of alternatives to two, including the Midway Site with extended aeration (EA) and mixed advanced wastewater treatment (MAWT) (summer land treatment) and the existing City Lagoon Site with extended aeration and in-plant advanced biological treatment (ABT). Total costs of these alternatives are estimated by Wright-McLaughlin and Steamboat Springs engineering staff as follows:

	Midway (EA-MAWT)	Steamboat (EA-ABT)
Phase I (to 1985)		
Capital Cost*	4,167,500	4,769,710
Operation and Maintenance (8 yrs)	1,200,000	1,668,800
Subtotal	5,367,500	6,438,510
Phase II (1985-1997)		
Capital Cost	1,905,160	575,450
Operation and Maintenance	2,178,500	2,584,800
Subtotal	4,083,660	3,160,250
20-Year Total Costs	9,451,160	9,598,760

* 75 percent EPA funded

The estimated costs are extremely close and no appreciable distinction can be made between the cost of these alternatives. It can be concluded that in order to comply with water quality standards and provide capacity for projected growth[1], area residents must incur a local share debt of approximately $1.125 million. Also, since total costs of the treatment alternatives are nearly identical, the ultimate selection could be based on other criteria.

The Selected Treatment Technology and Plant Site

The draft EIS recommended the Midway Site and EA-MAWT technology. Over the last year extensive effort has been made to select a specific plant and land treatment site in the Midway area. At first discussion centered on purchasing land for the plant and leasing a treatment site of approximately 180 acres. However, it became apparent that the best way to control a summer land application program was through direct control of the land. The draft EIS also pointed out the existance of a zoned trailer park site that represented an incompatible land use along the southern side of the Yampa, west of the city. After considerable investigation and field tests, it was determined that purchase of the trailer park site (Meadow Industries property) would not only eliminate this undesirable land use, but also provide an acceptable site for the regional plant and land treatment program.

The only draw-back is that the Meadow Industries site may not be large enough to properly handle application of projected effluent volumes. Therefore, additional land may be necessary to be used in conjunction with the Meadow Industry-Midway site. Another river crossing and associated costs hinder use of the nearby city golf course while neighboring property owners (to the Meadow property) are reluctant to sell land parcels for this use. As a result, the facilities planning effort was faced with an obstacle. Further detailed investigations found that assets of retaining the Meadow site in agricultural production via purchase for the land treatment program could be accomplished without needing additional land. Application rates can be varied according to underlying soils and topographic features however projected effluent volumes are estimated to exceed the land's capacity for surface drainage. It was determined that it is cost effective (see Chapter VI-Costs) to provide in-plant treatment capability to be used according to a 40-60 split where 60 percent of the effluent would receive nitrification treatment in-plant and then discharged directly to the Yampa, while the 40 percent would be an ideal loading for land application. This compromise solution allows uniform flow to the land treatment system and provides in-plant backup capability as sized.

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[1] A population forecast was prepared as part of this EIS and used for facility planning.

Other Considerations

Inflow and infiltration (I/I) is a significant problem particularly in the older part of the city. **Volume** One of the Facilities Plan found that I/I repair and a new interceptor to the city plant was cost effective and should be begun as soon as possible. For this reason EPA circulated on March 10, 1977, a negative declaration indicating that an EIS was not required for this portion of the 201 project allowing repairs and construction to proceed. These measures are currently being implemented as proposed.

The Facility Plan outlines measures to be used to control urban runoff which is a significant problem. The Plan's recommendations are very worthwhile and should greatly improve water quality if implemented. However, little effort along these lines have been instituted to date, a situation that must change to achieve prescribed water quality goals.

Several citizens and elected officials raised concerns as to possible future residential development along the proposed line between the present lagoon and the proposed Midway Site on the Meadow Industries property. EPA is tasked with the responsibility under PL 92-500 of reviewing the adverse secondary impact of projects supported with federal funds. The proposed secondary effluent transmission line or interceptor connecting the existing lagoon to the proposed Midway Site could induce residential development which, if extensive, could create the following adverse effects:

1) Overload the tertiary plant with raw sewage jeopardizing plant operations designed to meet permit limitations.

2) Result in large scale residential development which could:

    a) encrouch upon the 100 year flood plain which would create a higher flood hazard;
    b) change portions of the area from agricultural land to residential development thereby reducing the agricultural productivity of the area;
    c) increase non-point pollutant runoff from urbanized areas located close to the river;
    d) encrouch upon the few small wetlands in the valley which are valuable wildlife habitats.

EPA is interested in reducing such potential adverse effects and regards it as essential that the amount of raw sewage flowing to the Midway Site not exceed the design of the plant. The other potential adverse effects are best mitigated by local land use planning.

On August 9, 1977 a public referendum was held on a $1.5 million bond issue. These funds were intended for use as follows:

- $800,000 for potable water distribution system improvements.
- $400,000 for a new Fish Creek flow line which is the principal source of Steamboat Springs drinking water.
- $300,000 for the local share of sewer line inflow and infiltration (I&I) repairs and a new interceptor between the Mt. Werner plant and the present city lagoons. In addition, funds would be used for Step 2 design.

Other items on the ballot included an increase in the city sales tax and water meters which helped lead to the defeat of this bond issue. However, the City Council determined that the I and I repairs and the new interceptor were too important to risk forfiture of federal matching funds. As a result, on August 11, 1977, council allocated sufficient funds from the contingency budget so that these related 201 efforts could proceed without interruption.

Mitigating Measures

Mitigating measures which will be required by EPA in order to reduce the primary and secondary impacts of this project include:

1) A revegetation plan for the interceptor line corridor between the present city lagoon site and the new Meadow property site.

2) Compliance with the recommendations of the archaeological survey currently being conducted.

3) Compliance with 404 permit conditions for interceptor stream crossings.

4) Special provisions for protecting public health as required by state and local agencies for application of effluent and disposal of sludge.

5) The Step II final design should demonstrate energy conservation measures to be incorporated into the design.

6) At the request of, and in conjunction with Routt County; a restriction shall be imposed on Steamboat Springs limiting taps on the new Midway interceptor to existing sanitation districts (Steamboat II and Riverside) and the Sleepy Bear and KOA developments as currently zoned. Exempt from this provision are all existing residences as of the date of the Step II grant.

Other Options

The Mt. Werner Water and Sanitation District proposed that a sub-alternate be included with the dual MAWT/ABT system at Midway. This modification would expand secondary treatment and disinfection systems at the Mt. Werner lagoon and pump approximately 175 acre-feet of treated effluent to the nearby LTV golf course (see Study Map 2). It was argued that this will augment stream flow in Fish Creek by requiring less diversion for golf course irrigation and effectively re-use nutrients in the effluent. This sub-alternate was approved by the Steamboat Springs City Council for inclusion with the 201 Plan. However, EPA after careful consideration has concluded that this would not be a cost-effective measure, is not necessary to meet the discharge permit conditions and provided unproven benefits for maintaining minimum stream flow in Fish Creek.

Future Actions

EPA expects to complete the Step II grant to Steamboat Springs by September 30, 1977, in order to commit Fiscal Year 76 funds. All responses to this EIS must be received by EPA no later than September 27, 1977, in order to be considered prior to this grant approval. EPA hopes the interested individuals will remain involved in expressing their views to EPA, the Colorado Health Department, and especially to Steamboat Springs as this project moves through design and on to construction. Design and specifications will be completed by an engineering firm under the direction of the engineering staff of Steamboat Springs. EPA trusts Steamboat Springs will continue to involve citizens and other government agencies during this design process to allow for the fullest possible discussion of alternatives. EPA suggests that the city hold a series of informational meetings for the public to discuss the design and construction stages of the project as these items are developed.

II. Water Environment

Goals

In this section agency and citizen water quality aspirations are summarized into policies and translated into needed facility additions. The facilities additions are referred to as structural and non-structural alternatives and are developed to implement the policies. The discussion begins with a review of the expressed citizen goals and agency regulations and is followed by a description of the design engineer's recommended design criteria.

The 201 facilities planning for Steamboat Springs is fortunate to have participation from an active and inquisitive citizenry manifested in the Citizen's Advisory Committee (CAC). The goals of this committee were published in the January 23, 1975 Steamboat Pilot and they were unusually succinct and specific (Table II-1). The Pilot also published a lengthy questionnaire on numerous water-related topics (WME, Volume I, pp. III22-33). Responses to this questionnaire indicated that the problem of Yampa River quality/flow and water/sewer systems was the third most important priority behind the county's problems of managed growth and improvements in the local economy. Additional interest was indicated for the development of an areawide wastewater treatment system, a raw water storage and treatment system, and consolidation of the nine districts that handle the area's sewage effluent.

The members of the CAC served as "watchdogs" during the entire 201 Step 1 process, meeting at least monthly over the last year and a half. The work effort of the project engineer--Wright-McLaughlin, as well as that of the environmental consultant--Weiner & Associates, was continuously reviewed by the CAC for its achievements toward their expressed goals.

The Colorado Department of Health, the US Environmental Protection Agency (EPA), and Routt County are currently the principal regulatory agencies associated with water quality in the Steamboat Springs area. The State of Colorado has exercised its option under the Water Pollution Control Act of 1972 as Amended (PL 29-500), and it has assumed the primary responsibility for administering the National Pollutant Discharge Elimination System (NPDES). This system allows wastewater permits to be issued by the Health Department's Water Quality Control Division and it prescribes allowable discharge levels for wastewater effluents. Another arm of the Health Department, the Water Quality Control Commission, helps administer the available federal funds for planning and constructing wastewater facilities, in conjunction with the EPA. This commission establishes priorities for allocating these funds within the State of Colorado.

TABLE II-1

STEAMBOAT SPRINGS REGIONAL SERVICES AUTHORITY

WASTEWATER MANAGEMENT FACILITIES PLANNING STUDY
WATER-ORIENTED GOALS AND POLICIES
BY STEAMBOAT CITIZENS ADVISORY COMMITTEE

Our goal is an enjoyable Yampa river - enjoyable from its headwaters to the county line. We believe that the stream banks and water should be protected from further degradation and that restoration and improvement of the river should be undertaken so that it becomes a flourishing environment for fishing, and swimming, and as a wildlife habitat. A green Yampa Valley will also serve to shape our urban area by helping to control urban sprawl.

1. The Yampa River and its tributaries should be fishable and swimmable, suitable for body contact anywhere in Routt County, and the water should be less polluted when it leaves the study area than when it enters.

2. Wastewater management systems shall be designed to meet the 1985 federal water quality goals "that the discharge of pollutants into navigable water be eliminated by 1985." This goal is interpreted to mean that water discharged to the Yampa be essentially of the same high quality as the natural Yampa River water.

3. One of the alternatives to be investigated should be land treatment. If at all possible, nutrient-laden wastewater should be utilized for agricultural and reclamation purposes rather than being discharged into the stream.

4. An advanced level of waste treatment is necessary to provide a realiable and consistently high quality of effluent discharged to the Yampa River.

5. All alternatives investigated must enhance the agricultural industry of Routt County and the SSRSA study area to provide a diverse economy for the stability of the region.

6. Urban storm runoff and urban snowmelt carry many harmful pollutants to the stream. Alternatives must consider the possible storage and treatment of runoff to achieve the clean water goals articulated by Congress, to mitigate local flooding and to keep wastes out of the stream. Investigate the detrimental effects of the mineral and thermal pollution that the natural springs contribute to the Yampa.

7. The implementation of this study shall not interfere with the established minimum flow in the Yampa River, and if possible the minimum flow should be increased.

8. Flood plain management should include flood plain regulations, acquisition of flood plain lands for recreation, fish and wildlife. The value of structural vs. non-structural management as well as relocation aspects deserve study. In so far as possible, flood plain management should enhance the stream's natural eco-systems.

9. The program should be designed to provide controlled public access to the Yampa. Enhancement of the natural beauty of the River should be encouraged.

10. The type and extent of treatment facilities shall be coordinated with public agency planning efforts and Master Plans; ideally providing green and productive open lands.

11. Existing utilities (water, sewer, roads) in existing developments should be rehabilitated to modern levels to provide a better standard of living and to encourage growth within Steamboat Springs and other existing water and sanitation districts, furthering the theme of Urban Conservation.

12. The means of curtailing winter bleeding and other infiltration problems should be studied to provide the best economic practice in terms of water resources and wastewater treatment.

13. The environmental resource should be protected; resources should be managed in cooperation with all other systems and goals.

14. Agricultural, industrial, and other positive endeavors which broaden the economic base and best compliment our resources should be encouraged.

15. Wastewater plans should be laid to positively aid in water resource management.

16. This study shall be cognizant of costs, and the greatest benefit to cost relationship shall be of prime concern.

17. Consolidation and unification of the various water and sanitation districts should be studied in consideration of financial and organizational values.

18. The treatment facilities shall be designed and constructed in phases to accomodate expansion in increments according to population and/or needs.

Source: Wright-McLaughlin Engineers, Oct. 1975

Another function of the Water Quality Control Commission has been to set up water quality standards for the state's streams. This role has resulted in establishing four categories: A_1, A_2, B_1, and B_2 (Table I of Appendix A). Streams with the A ratings are those that exhibit a high quality so they can be used for normal raw water purposes, including primary contact recreation (swimming, skiing, etc.); streams with B classifications are those that have a current and future use for non-contact recreation (primarily fishing, etc.). The numerical designation A_1 or B_1 refers to the designation for a cold water fishery and A_2 or B_2 refers to a warm water fishery. Major streams in the state have been placed into one of these four categories; and each one represents a minimum water quality that must be maintained at all times, except during drought periods when flow drops below the seven-day, 10-year average. In the project area, the Yampa River and all of its tributaries are currently classified as B_1 class streams--which is the cold water fishery designation. A summary of its water quality standards are given in Table I of Appendix A, along with the standards for the other three classes.

An important corollary to maintaining a certain stream classification is the control of its point sources of discharge. The Water Quality Control Commission has also established standards for this and they are displayed in Table II of Appendix A. These standards represent the basis of existing permits and most permits conform to them. Routt County has also adopted similar standards, shown in Table III of Appendix A, and they are more stringent than the existing discharge permits (Table IV of Appendix A). This departure from state standards has not been tested by a legal confrontation, yet it may not occur if the state's 1977 permit more closely reflects the county's standards.

In addition to the state and county discharge standards, the Federal Water Pollution Control Act (as Amended) requires that by July 1, 1977, all sewage treatment plants must provide a minimum of secondary treatment to all wastewater plant effluent. Essentially, "secondary treatment" requires a minimum of 85 per cent removal of the organic constituents (biological oxygen demand -- BOD) and suspended solids. A Best Practical Waste Treatment Technology (BPWTT) must also be applied to these effluents before July 1, 1983. This BPWTT may consist of alternatives employing treatment and discharge to navigable waters, land application techniques, or direct reuse. The form it takes should be the most cost effective alternative that provides the treatment necessary to attain the 1983 water quality goal. This goal provides for the protection and propagation of fish, shellfish, and wildlife and also provides for recreation in and on the water (fishable/swimmable goal).

When streams are assigned a particular water quality classification (A_1 or B_1 etc.,) and are regulated for effluent discharges, they are also classified as either effluent limited or water quality limited.

The effluent limited class are those that meet the present water quality standards and will continue to meet them in the future if adequate "secondary treatment" is provided. The water quality limited class consists of those segments where water quality does not now meet the applicable standards and/or is not expected to do so even after compliance with the secondary effluent limitations.

Further order is imposed on the streams, by the development of an over-all river basin plan. This plan is required by section 303 (e) of PL-92-500 and is intended to establish goals and priorities for the Steamboat Springs area the applicable plan has been completed and is entitled the "Water Quality Management Plan for the Green River Basin" (McCall-Ellingson & Morrill, Inc. April 1974). Based on computer model simulations conducted under the study, the SSRSA area is assigned maximum BOD allocations. The BOD allocation for the SSRSA area totals 240 lbs. per day, of which 238 pounds are allocated to the districts studied in this report and 2 pounds are allocated to Bear Pole Ranch. The study also designated the Yampa River as water quality limited for ammonia, based on the EPA's toxicity criteria. Consequently, the study recommended nitrification controls for the basin's wastewater treatment plants. This recommendation, in conjunction with the BOD allocations, has been accepted by the Colorado Water Quality Control Commission.

Pursuant to the ammonia recommendation, Wright-McLaughlin Engineers have proposed a variable ammonia allocation for the SSRSA (June, 1977). It is based on the toxicity of ammonia to aquatic life, projected peak sewage flows in 1985 and 2010, and the assimilative capacity of the Yampa during 7-day, 10-year low flows. Calculations with these parameters provide allowable discharges of ammonia-nitrogen varying from 2.8 to 9.0 mg/ℓ for 1983 criteria and 0.5 to 9.0 mg/ℓ for 1985 criteria (Wright-McLaughlin, June, 1977). However, only 1983 criteria are deemed applicable to this project and resultant allowable discharges have been modified further to accomodate the compromise program. These accomodations are shown in Table II-2 for 1985 projected flows and they vary between a lower limit of 43 pounds per day or five mg per ℓ, whichever is greater and an upper limit of nine mg per ℓ.

Other major effluent criteria also are shown in Table II-2 yet a more complete list of these recommended standards is shown in Table V of Appendix A. This list delineates detailed guidelines for effluent discharges that would conform to 1978 and 1983 criteria. It has been developed by Wright-McLaughlin Engineers and provides the basic environmental framework for this 201 project. This plan has been formally approved by the Colorado Water Quality Control Division and provides a sound basis for achieving the 1983 goal of fishable/swimmable water quality. This goal can be achieved, provided additional

TABLE II-2

1983 EFFLUENT DESIGN CRITERIA

Parameter	Concentration		Rationale
BOD_5	238 pounds/day or 10 mg/ℓ		303 Basin Plan allocation >85% removal from influent
SS	10 mg/ℓ		>85% removal from influent
NH_3 - N	July 1 - Oct. 15	5mg/ℓ or 43 lb/day[2]	303 Basin Plan recommends nitrification; Wright McLaughlin Engineers recommends these allocations based on EPA's toxicity limits, 1985 projected sewage flows and 7-day, 10-year low flows.
	Other Months	9mg/ℓ	
P	5 mg/ℓ		Wright-McLaughlin's recommendation; with 1985 projected flows and 7-day, 10-year low flows, the resultant river concentration would be less than 1 mg/ℓ the upper limit for non-polluted streams.[1]
Cl Residuals	0.028 mg/ℓ		Wright-McLaughlin's recommendation, based on EPA's toxicity limits projected 1985 sewage flows and 7-day, 10-year low flows.
Fecal Coliforms	Variable so river concentration is less than 1000 colonies per 100 ml		EPA standards

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[1] Computed by EPA on a monthly basis.

[2] Whichever is more.

programs are implemented to control agricultural and urban non-point runoff. The need for such programs is further explained in this chapter, while specific programs are recommended in Chapter VIII, Mitigation Measures.

Existing Water Quality and Quantity

The waters of the project area can be divided into two main categories: surface waters and groundwaters. Both types are used for domestic and agricultural purposes and must be protected to insure their continued value. The surface waters are direct receivers of the secondary effluent from the existing plants; the groundwaters are indirect receivers. Both waters are in contact with each other although the quantity and quality of surface waters are generally more variable. The text that follows highlights the existing information on these environments.

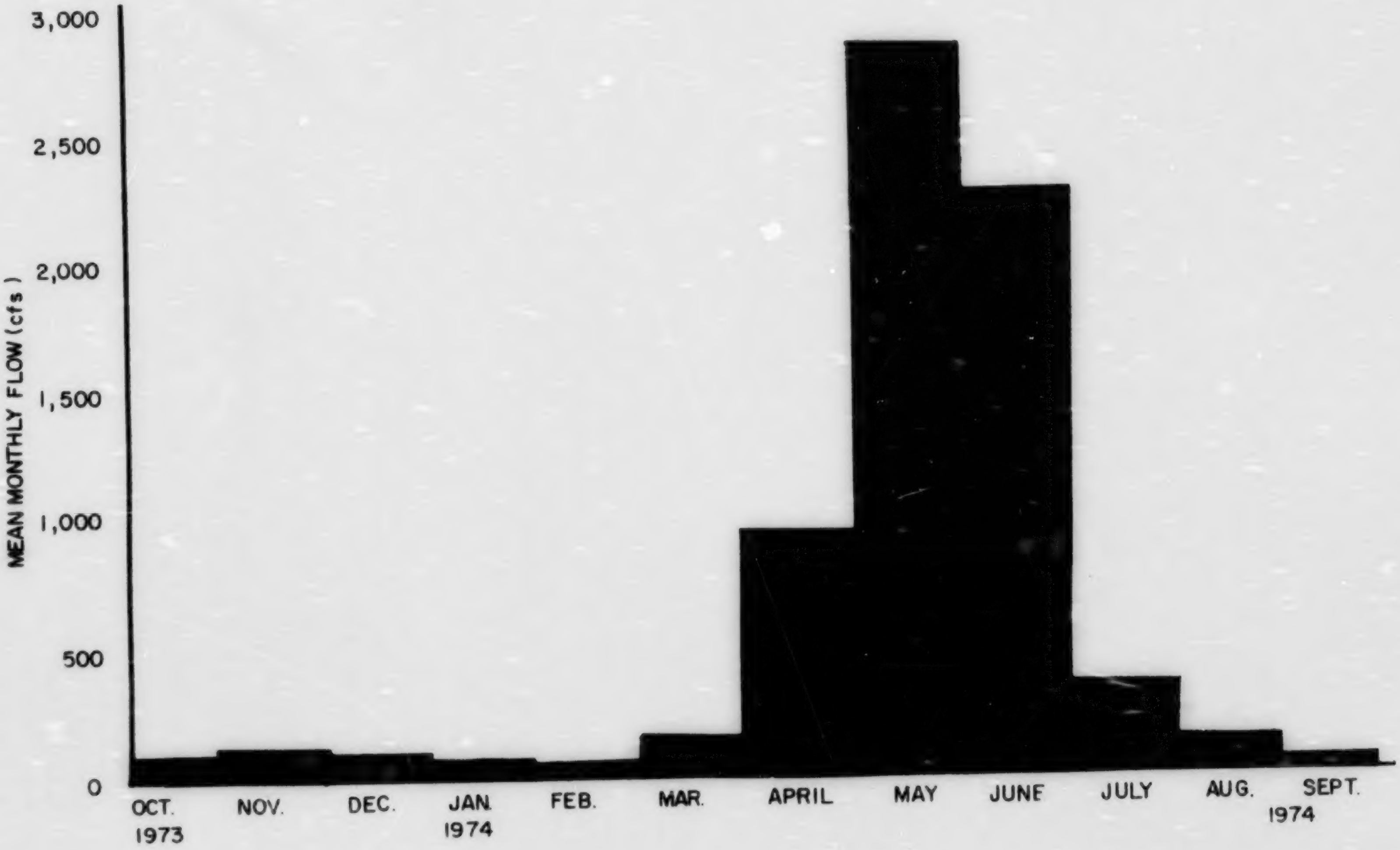
Surface Water

The important surface waters of the project are running waters, represented by the Yampa River and some of its tributaries (Study Map 1). The headwaters of the Yampa River are in Garfield County, about five miles east of Trappers Lake. From here it flows north to Steamboat Springs, then west to Dinosaur National Monument where it joins the Green River. As it flows through the study area, it picks up Walton, Burgess and Fish Creeks from the east and Spring, Butcherknife, Soda and Slate Creeks from the north. None of these creeks are major tributaries, yet they are important to the quality and quantity of the Yampa River in the study area. The text that follows highlights the existing information on these waterways and it is divided into a discussion on water flow and water quality.

Water Flow: Most information on the study area's water flow has been collected on the Yampa River by the United States Geological Survey (USGS). Their permanent gaging station, located at Steamboat Springs, Colorado, has been operative since 1904. The first 67 years of its operation produced an average flow of 469 cubic feet per second (cfs). Its maximum instantaneous flow occurred on June 14, 1921 with a value of 6,820 cfs; the minimum daily flow occurred on September 8, 1934 with a value of 4 cfs. This flow accumulated from a drainage basin of 604 square miles.

Values for the last reported year of operation appear in Figure 3. During this period the maximum instantaneous flow was 5,790 cfs (April 26) and the minimum daily flow was 58 cfs (September 23). Only the minimum flow differed radically from the extreme values of the historical records.

The low flow values for the Yampa are especially important to design engineers since they are interested in the river's ability to dilute



FLOW PATTERN OF YAMPA RIVER AT STEAMBOAT SPRINGS

FIGURE 3

sewage effluent. For these purposes, the Colorado Water Quality Control Division recommends a design period that estimates a seven-day average of low flows, occurring once in 10 years. These estimates were made by McCall-Ellingson and Morrill, Inc. in their Green River Basin Study (1974), and they developed a value of 27 cfs for the Yampa at Steamboat Springs. This value was computed on an annual basis, according to USGS standards. Another analysis was provided by Wright-McLaughlin Engineers in their 201 Facilities Plan (1975), it was computed on a monthly basis. They estimated values of 67 cfs for January, 440 for May, 60 for August and 33 for September. Their September value of 33 was very close to the 27 cfs estimated by McCall-Ellingson and Morrill, Inc.

The flow rates for the Yampa's tributaries in the study are not well documented. However, Dr. Robert Pennak observed that Walton, Fish and Soda Creeks contribute substantial flows in July (Wright-McLaughlin Engineers, October 1975). In September of that same year, the USGS recorded flows of 1.2 cfs for Walton Creek, 1.6 cfs for Fish Creek, 0.5 cfs for Spring Creek, 0.8 cfs for Butcherknife Creek and 1.6 cfs for Soda Creek (Table II-8). These values were recorded when the Yampa was flowing about 100 cfs. They also found that Slate Creek was dry during this same period.

The Corps of Engineers did some additional studies on these streams and calculated their drainage areas and peak flood flows (Department of the Army, Corps of Engineers, February 1976). The drainage areas are shown in Table II-3, including the overall one for the Yampa River. All drainage areas include regions that drain into a given river or stream, above the location cited in the table. Based on this information, Walton, Fish and Soda Creeks would contribute the most local tributary flow, while the others would contribute lesser amounts. The peak flood flows are shown in Table II-4, which also includes estimations for the Yampa River. The 100-year flood would occur with an average frequency of one in one hundred years and the 500-year flood is shown in Study Map 1. If the reader desires to know coverage of the 500-year flood, contact the Sacramento Office of the Corps of Engineers or the City of Steamboat Springs.

TABLE II-3

DRAINAGE AREAS

River or Stream	Area (sq. miles)	Location
Yampa River	604	USGS gaging station
Soda Creek	20	Corporate limit
Butcherknife Creek	4	Corporate limit
Spring Creek	8	Corporate limit
Fish Creek	25	Upper gaging station
Walton Creek	42	Gaging station
Burgess Creek	4	Near Storm Meadows Dr.

TABLE II-4

FLOOD FLOWS

River or Stream	Locations	Peak Flow (cfs) 100-yr.	Peak Flow (cfs) 500-yr.
Yampa River	USGS gaging station	8,000	20,000
Soda Creek	Corporate limit	1,300	2,900
Butcherknife Creek	Corporate limit	320	1,300
Spring Creek	Corporate limit	650	2,400
Fish Creek	Upper gaging station	1,800	4,600
Walton Creek	Gaging station	2,700	5,600
Burgess Creek	Near Storm Meadows Dr.	360	1,400

Water Quality: The quality of the Yampa River is well known at Milner, Colorado, and at the confluence with Oak Creek. The Milner station is about 11 miles downstream from Steamboat Springs and the Oak Creek station is about seven miles upstream. The data from these stations have been collected by the Colorado Health Department (Colo. HD) and are displayed in Tables II-5 and II-6. This information is compared with the Colorado standards for B_1 streams. Additional data has recently been collected by the USGS and Routt County as part of a regional study on coal development and a 208 study (USGS open-file reports 76-367 and 76-368). Their preliminary data is displayed in Table II-8, part of which has been used to further analyze and evaluate the Yampa, using two operational water-quality models (Bauer, et al., 1976, in review).

The health department's analysis shows that the Yampa River has historically violated standards for B_1 streams. The Oak Creek station reports violations of dissolved oxygen on two occasions, and the Milner station reports it on four occasions.[1] The Milner station also shows violations in temperature, pH and fecal coliforms. The temperature and pH violations appear to be of natural origin but the violations of fecal coliforms are caused by organic pollution (BOD). The low levels of dissolved oxygen are probably also caused by excessive organic pollution although this has not been determined with certainty.

Other guidelines for stream quality come from the EPA's research report, Water Quality Criteria 1972 and Quality Criteria for Water (1976), which provide recommendations for the maintenance of a healthy aquatic environment. These guidelines indicate that the Yampa possesses good chemical water quality in the vicinity of the project area.[2] This assessment is based partially on general water quality data of Tables II-5 and II-6, plus trace element data of Table II-7. Other water quality information on pesticides, collected by the USGS near Steamboat Springs, indicates potential concentrations are beyond levels of detection. While information on radioactivity shows that alpha and beta emissions occur at natural levels and could not be considered a hazard (Milt Lammering, EPA, personal communication).

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[1] These violations occurred prior to 1972; their values are considered questionable by the Colorado Water Quality Control Division.

[2] The earlier evaluation in the draft EIS had indentified suspended solids, lead and zinc as potential factors for degrading water quality. The suspended solids were dropped from consideration due to inaccurate data interpretation; lead was dropped since the hard waters of the Yampa River do not promote the toxic condition that was identified earlier using a soft water designation; and zinc is still being evaluated to determine its true toxic potential.

TABLE II-5

WATER QUALITY OF YAMPA RIVER AT MILNER, COLORADO

Sampler: Colorado Dept. of Health Sample period: 3/26/68 to 5/7/75

Value	Min.	Max.	Date of Maximum Value	Colorado B_1 Stream Standards
Water Temp. °F	32	72	7/22/69	68
Turbidity JTU	2.7	169.0	4/6/72	No increase >10
Conductivity umhos/cm	54	910	6/15/70	
Dissolved Oxygen mg/1	5.0 (7/22/69)	12.5		>6.0
BOD 5-day mg/1	0.5	4.0	4/16/68	
pH	7.2 (6.7.72)	9.2	7/22/69	6.0-9.0
TDS mg/1	68	398	2/18/69	
Suspended Solids mg/1	0	163	4/22/75	
NH_3-N mg/1	0	0.5	3/4/75	
NO_2-N mg/1	0	0.03	1/24/72	
NO_3-N mg/1	0	1.15	1/14/75	
PO_4 mg/1	0	1.4	6/15/70	
Cyanide mg/1		0		
Total Hardness as $CaCO_3$ mg/1	24	236	2/18/69	
Calcium as $CaCO_3$ mg/1	16	120	4/3/74	
Magnesium mg/1	2	28	2/18/69	
Sodium mg/1	1	45	2/18/69	
Chloride mg/1	0.1	1.2	2/18/69	

Value	Min.	Max.	Date of Maximum Value	Colorado B_1 Stream Standards
Sulfate mg/1	5	128	2/18/69	
Fluoride mg/1	0.1	4.0	6/5/68	
Arsenic mg/1		0		
Boron mg/1	0	0.12	10/4/71	
Cadmium mg/1		0		
Chromium (+6) mg/1		0		
Copper mg/1		0		
Iron mg/1		1.6	1/11/73	
Lead mg/1	0	0.044	5/7/75	
Manganese mg/1	0	0.1	1/11/73	
Molybdenum mg/1	0	0.04	4/16/74	
Silver mg/1	0	0.019	5/7/75	
Zinc mg/1	0	0.36	4/16/74	
Selenium mg/1	0	0.005	6/5/68	
Total Coliforms per 100 ml	33	23,000	11/26/68	
Fecal Coliforms per 100 ml	2	3300	3/26/68	< 1000
Mercury mg/1	0	0.0002	1/24/72	

TABLE II-6

WATER QUALITY OF YAMPA RIVER ABOVE OAK CREEK

Sampler: Colorado Dept. of Health   Sample Period: 11/17/70 to 5/5/75

Value	Min.	Max.	Date of Maximum Value	Colorado B_1 Stream Standards
Water Temp. °F	32	65	7/24/72	68
Turbidity JTU	4	98	12/1/70	No increase >10
Conductivity umhos/cm	75	476	2/3/71	
Dissolved Oxygen mg/l	5.0 (11/1/71)	12.2		>6.0
BOD 5-day mg/l	1.0	9.0	1/15/75	
pH	7.1 (6/7/72)	8.9	8/14/74	6.0-9.0
NH_3-N mg/l	0	0.16	5/7/73	
NO_2-N mg/l	0	0.037	9/25/73	
NO_3-N mg/l	0	1.22	1/15/75	
PO_4 mg/l	0	0.4	2/3/71	
Cyanide mg/l	0	0.6	1/6/72	
Total Hardness as $CaCO_3$ mg/l	86	233	2/3/71	
Calcium as $CaCO_3$ mg/l	59	159	2/3/71	
Magnesium mg/l	6	19	1/11/71	
Sodium mg/l	3	18	2/3/71	
SAR	0.2	0.6	2/3/71	
Chloride mg/l	4	12	11/25/70	
Sulfate mg/l	10	84	4/3/74	

Value	Min.	Max.	Date of Maximum Value	Colorado B_1 Stream Standards
Fluoride mg/l	0.1	0.8	11/25/70	
Arsenic mg/l		0		
Boron mg/l	0	0.12	10/4/71	
Cadmium mg/l		0		
Chromium (+6) mg/l		0		
Copper mg/l	0	0.06	11/25/70	
Iron mg/l	0.02	2.0	5/5/75	
Lead mg/l	0	0.12	11/25/70	
Manganese mg/l		0		
Molybdenum mg/l	0	0.01	5/5/75	
Silver mg/l		0		
Zinc mg/l	0	0.55	5/7/73	
Selenium mg/l	0	0.002	11/12/74	
Total Coliforms per 100 ml	2	30,000	2/3/71	
Fecal Coliforms per 100 ml	1	300	2/3/71	<1000
Mercury mg/l	0	0.0005	11/17/70	0.002
TDS @ 180 °C mg/l	85	341	2/3/71	
Suspended Solids mg/l	218	518	1/15/75	

TABLE II-6

WATER QUALITY OF YAMPA RIVER ABOVE OAK CREEK

Sampler: Colorado Dept. of Health　　Sample Period: 11/17/70 to 5/5/75

Value	Min.	Max.	Date of Maximum Value	Colorado B_1 Stream Standards
Water Temp. ^oF	32	65	7/24/72	68
Turbidity JTU	4	98	12/1/70	No increase >10
Conductivity umhos/cm	75	476	2/3/71	
Dissolved Oxygen mg/1	5.0 (11/1/71)	12.2		>6.0
BOD 5-day mg/1	1.0	9.0	1/15/75	
pH	7.1 (6/7/72)	8.9	8/14/74	6.0-9.0
NH_3-N mg/1	0	0.16	5/7/73	
NO_2-N mg/1	0	0.037	9/25/73	
NO_3-N mg/1	0	1.22	1/15/75	
PO_4 mg/1	0	0.4	2/3/71	
Cyanide mg/1	0	0.6	1/6/72	
Total Hardness as $CaCO_3$ mg/1	86	233	2/3/71	
Calcium as $CaCO_3$ mg/1	59	159	2/3/71	
Magnesium mg/1	6	19	1/11/71	
Sodium mg/1	3	18	2/3/71	
SAR	0.2	0.6	2/3/71	
Chloride mg/1	4	12	11/25/70	
Sulfate mg/1	10	84	4/3/74	

Value	Min.	Max.	Date of Maximum Value	Colorado B_1 Stream Standards
Fluoride mg/1	0.1	0.8	11/25/70	
Arsenic mg/1		0		
Boron mg/1	0	0.12	10/4/71	
Cadmium mg/1		0		
Chromium (+6) mg/1		0		
Copper mg/1	0	0.06	11/25/70	
Iron mg/1	0.02	2.0	5/5/75	
Lead mg/1	0	0.12	11/25/70	
Manganese mg/1		0		
Molybdenum mg/1	0	0.01	5/5/75	
Silver mg/1		0		
Zinc mg/1	0	0.55	5/7/73	
Selenium mg/1	0	0.002	11/12/74	
Total Coliforms per 100 ml	2	30,000	2/3/71	
Fecal Coliforms per 100 ml	1	300	2/3/71	<1000
Mercury mg/1	0	0.0005	11/17/70	0.002
TDS @ 180 ^oC mg/	85	341	2/3/71	
Suspended Solids mg/1	0	315	1/15/75	

TABLE II-7

DISSOLVED TRACE ELEMENTS IN THE YAMPA RIVER NEAR STEAMBOAT SPRINGS[1]

Parameter	Number of Samples	Mean (mg/ℓ)	Maximum (mg/ℓ)	Minimum (mg/ℓ)
Arsenic	4	0.0003	0.001	n.d.[2]
Cadmium	5	0.0004	0.001	n.d.
Cobalt	5	0.0002	0.001	n.d.
Copper	5	0.002	0.005	0.001
Iron	5	0.066	0.110	0.020
Lead	5	0.0008	0.002	0
Manganese	5	0.024	0.050	0.010
Nickel	5	0.0008	0.002	0
Vanadium	5	0.0017	0.0026	0.0004
Zinc	5	0.004	0.020	0
Antimony	4	n.d.	n.d.	n.d.
Selenium	5	n.d.	n.d.	n.d.

---

[1] Collected by USGS between 8/25/75 and 8/30/76, values subject to further verification.

[2] Not detectable.

Phosphate and nitrates in the Yampa River vary considerably between Oak Creek and Milner. Although both of these compounds can cause algal nuisances, the nuisance levels have not been determined for the Yampa River ecosystem. At Oak Creek phosphate-phosphorus ranged between zero and 0.1 mg/ℓ and at Milner, between zero and 0.4 mg/ℓ. The nitrate-nitrogen ranged between zero and 1.22 mg/ℓ at Oak Creek and between zero and 1.15 mg/ℓ at Milner.

The data collected by the USGS and Routt County is displayed in Table II-8: it is preliminary information that is subject to further verification. It includes water quality values for the Yampa River between Agate Creek and the Elk River, plus values for tributaries and effluent discharges. The sample locations are shown on Study Map 1, with the "Y" designations referring to Yampa River sites, the "T" designations to tributaries and the "E" designations to sewage effluents. The range of values for each parameter are reported as minimum and maximum; when only one value was collected, it was reported as maximum. The data were collected over a 24-hour period.

The Yampa River sites showed values that were within the state's standards for B_1 streams, with the exception of site Y8, the most downstream site. It had a pH value of 9.1, which is outside the accepted range of 6.0 - 9.0. The values for phosphate-phosphorus ranged from zero to 0.74 mg/ℓ; the values for total phosphorus ranged from zero to 0.99 mg/ℓ. The values for nitrate-nitrogen varied between zero and 0.17 mg/ℓ.

The conductivity values for the Yampa River are indicative of its concentrations of total dissolved solids. These concentrations usually range between 54 percent and 96 percent of the value for conductivity (Hem, 1970). Consequently, it is noteworthy that the conductivity values average around 280 for stations Y1 through Y3 and around 370 for the remaining stations (Study Map 1). This observation implies that inflow near the city of Steamboat Springs is responsible for increasing total dissolved solids in the Yampa River, perhaps by as much as one-third. This inflow comes mainly from the hot sulfur springs east of town, which contribute an estimated 250 gallons per minute at 1450 micromhos per centimeter and the cold springs west of town, which contribute an estimated 50 gallons per minute at 7500 micromhos per centimeter (R.E. Moran, 1976, USGS, oral communication).

The tributaries of the Yampa were all within the standards for B_1 streams. Their conductivity values were lower than the Yampa River sites, which indicates they contain fewer dissolved solids.

TABLE II-8

WATER QUALITY OF YAMPA RIVER BASIN[1]

September 23, 24, 1975

Station Number	Instantaneous Flow CFS	Sample Value	Temp. °C.	Conductivity umhos/cm	pH	Dissolved Oxygen mg/1	$NO_2(N)-NO_3(N)$ mg/1	NH_3-N mg/1	Organic N mg/1	PO_4-P mg/1	Total P mg/1	Total Coliforms per 100 ml	Fecal Coliforms per 100 ml	BOD 5-day mg/1
Y1	98	Min.	6.5	280	8.4	7.0								0.8
		Max.	11.5	290	8.8	9.8	0.01	0	0.19	0.02	0.04	60	31	1.4
T1	1.2	Min.	7.0	50	7.8	7.1								
		Max.	17.0	75	8.9	9.6	0	0	0.15	0.01	0.02	6	2	0.4
Y2		Min.	11.0		8.6	7.8								
		Max.	12.5	275	8.8	9.5	0.01	0	0.23	0.04	0.04			
E1	0.8 to 1.6	Min.	7.0	310	7.3	5.8	0.04	16.0	4.0	7.2	8.7			53
		Max.	23.0	420	8.7	17.6	0.06	18.0	19.0	7.4	9.6	2.2×10^6	0.28×10^6	55
T2	1.6	Min.	4.0		7.8	7.4								
		Max.	14.0	50	8.3	9.2	0	0	0.08	0.01	0.01	16	1	0.4
T3	0.5	Min.	6.5		7.6	7.6								
		Max.	13.0	50	8.0	8.5	0	0	0.08	0.01	0.01	33	9	0.8
Y3	111	Min.	6.5	260	8.3	7.2	0.01	0	0.25	0.03	0.05			1.6
		Max.	13.5	288	9.0	9.3	0.02	0.07	0.65	0.12	0.19	820	74	4.8
T4	0.8	Min.	6.0	105	7.4		0.02		0.14	0.01	0.02			
		Max.	8.5	195	8.0	9.6	0.04	0	0.55	0.03	0.05	3200	0	0.9
T5	1.6	Min.	4.5	180	6.4	8.0								
		Max.	11.5	220	7.4	10.8	0.04	0	0.14	0.01	0.02	90	34	0.6
Y4	97	Min.	7.0	350	7.1	7.9	0	0	0.30	0.01	0.05			1.4
		Max.	13.5	375	8.1	10.2	0.03	0.03	0.84	0.11	0.16	1000	86	4.0
E2	1.7	Min.	10.0	320	7.2	5.0	0.34	7.7	1.4	2.7	3.4			7.4
		Max.	17.0	410	8.7	16.0	0.43	8.4	6.2	2.8	3.9	21,000	1000	16.0
Y5	99	Min.	7.0	360	7.2	7.8	0.09	1.4	1.2	0.65	0.89			3.2
		Max.	14.5	380	8.7	13.2	0.17	2.1	1.8	0.74	0.99	4,900	460	7.2
E3	0.01	Min.	8.0	160	7.3	5.6							500	10
		Max.	17.0	800	8.8	12.4	24	0.16	4.3	14			700	17
E4	0.01 to 0.03	Min.	8.0	850	7.2	1.0	2.4	2.4	0.3	3.6	8.7			29
		Max.	16.0	1200	7.9	4.4	4.7	4.7	7.3	11	28	270,000	20,000	71
Y6	104	Min.	6.5	370	7.2	7.4	0.03	0	0.31	0.06	0.10	380	36	1.5
		Max.	14.0	380	8.9	11.6	0.05	0.07	0.67	0.14	0.18	3,500	370	2.9
E5	0.12	Min.	8.0	700	7.1	1.0	4.5	0	4.4	8.6	10			14
		Max.	22.0	900	7.6	6.2	4.7	0.08	5.1	9.1	11	1.1×10^6	58,000	45
Y7	94	Min.	7.0	360	7.8	7.2	0.01	0	0.38	0.02	0.09			1.3
		Max.	14.0	380	8.9	11.4	0.05	0.08	4.5	0.10	0.24	330	130	2.7
Y8	104	Min.	7.5	270	8.2	7.0	0.01	0	0.31	0.04	0.10			1.8
		Max.	14.0	380	9.1	10.7	0.02	0.03	1.4	0.14	0.16	92	60	[illegible]

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1 This data is preliminary information provided by the USGS; it is subject to further verification by their technical staff.

2 Station Y5 is no longer considered representative of the cross-section of mainstem flow, due to the influence of the Steamboat Springs sewage outfall (D.P. Bauer, *et al.*, 1976, in review).

Groundwater

Most of the groundwaters in the project area are found in rock layers mentioned in the Geology section. These layers are termed Morrison and Dakota formations, Mancos Shale, Browns Park formation and alluvium. Small quantities of additional groundwaters may be found in the granite east of Steamboat Springs. Much of this environment has been assessed by R.E. Brogden and T.E. Giles of the USGS (Reconnaissance of groundwater resources in a part of the Yampa River basin between Craig and Steamboat Springs, Moffat and Routt Counties, Colorado, publication in progress).

Only a few wells have been drilled into the Morrison and Dakota formations near Steamboat Springs. Water in the Morrison often contains high levels of hydrogen sulfide. This compound causes water to have a bad taste or bad smell. Water conditions in the Dakota formation are largely unknown, but it should be productive and potable since the Dakota is an important aquifer elsewhere in the state.

Some wells have been drilled into the area's Mancos Shale and Browns Park formations. Those in the Mancos Shale are located near the Steamboat Springs airport, where production is usually less than five gallons per minute (gpm). Their water quality is usually poor due to excessive hydrogen sulfide. Wells in the Browns Park formation are quite variable in both production and quality. Their yields very from ¼ to 350 gpm; their quality is best near areas of active surface recharge.

The alluvium is the formation that could receive the most impact from land treatment. It is highly variable in its rock composition and in its well yields. Some wells produce a few gpm while others produce from 150 to 200 gpm. The recharge of these wells is good along the Yampa River, where its rate is dependent on quantity of the surface runoff and on rates of irrigation.

The water table in the alluvium is best known by the USGS. They have mapped its general contours from their local knowledge of stratigraphy and well water levels (Study Map 1). These contours are not absolute, however, since the spring runoff would cause them to rise and summer dry spells, to decline.

Water quality of wells in the alluvium is generally excellent. Studies by Wright-McLaughlin Engineers corroborate this, yet they have found some wells to be high in total hardness (October 1975). The USGS also found high levels of hardness (Table II-9). These values are considered high since they exceed the USGS standard of 120 mg/ℓ (Hem, 1970). High hardness values also imply high concentrations of calcium and magnesium.

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TABLE II-9

GROUNDWATER QUALITY NEAR STEAMBOAT SPRINGS

	Well #1	Well #2	Well #3	EPA Drinking Water Standards
Collection Date	8/28/75	8/15/75	8/20/75	
Depth to Surface	25'	25'	55'	
Water Temp. °C	12.0	17.0	14.0	
pH	7.5	6.8	7.4	
Total Hardness as $CaCO_3$ mg/1	150	88	61	
Calcium mg/1	43	27	17	
Magnesium mg/1	10	4.9	4.5	125
Sodium mg/1	22	7.9	6.4	
Potassium mg/1	2.5	1.3	1.7	
Total Alkalinity as $CaCO_3$ mg/1	123	94	75	
Bicarbonate mg/1	150	115	91	
Chloride mg/1	8.6	0.5	2	250
Sulfate mg/1	66	8.1	1.7	250
Fluoride mg/1	0.3	0.1	0.1	1.1-1.8
NO_2 + NO_3 as N mg/1	0.02	0.52	0.11	10 (NO_3-N)
PO_4 mg/1	0.03	0.12	0.13	

	Well #1	Well #2	Well #3	EPA Drinking Water Standards
Collection Date	8/28/75	8/15/75	8/20/75	
Silica mg/1	17	18	26	
Arsenic mg/1	0.001	0	0	0.1
Cadmium mg/1	0.001			0.01
Iron mg/1	0.04	0.04	0.14	0.3
Lead mg/1	0.001			0.05
Manganese mg/1	0.54	0	0.03	0.05
Mercury mg/1	0			0.002
Molybdenum mg/1	0.001			
Nickel mg/1	0.002			
Selenium mg/1	0	0	0	0.01
Vanadium mg/1	0.0004	0	0	0.01
Zinc mg/1	0.08			5
Conductivity umhos/cm	420	220	140	
TDS mg/1		127		500
SAR	0.8	0.4		

Except for iron and manganese, concentrations of trace metals in these waters are generally low enough to be within the proposed EPA drinking water standards. Nitrate levels are also acceptable. This condition indicates that groundwaters in the Yampa River alluvium could accept some limited irrigation loading from trace metals and nitrates.

This latter parameter is critical since nitrates are known to leach readily into groundwater. Once they reach this environment, their residency time could be hundreds or thousands of years. Consequently, if the land treatment alternative is chosen, without using underdrains, application rates must be designed so that all applied nitrates can be absorbed by the plants or gasified into the atmosphere. Calculations used to determine application rates should account for all nitrogenous compounds, including ammonia and nitrite. These latter two should be considered since soil bacteria can convert them to nitrates and make them available to plants or to the groundwater.

Point and Nonpoint Sources

The purpose of this section is to describe discharges into the Yampa River, originating from the present sewage treatment systems and other significant sources. The first discussion covers discharges from the following sources: Steamboat Springs, Mt. Werner District, Steamboat II District, Bear Pole Ranch, Mineral Springs at Steamboat Springs, KOA Campground, Sleepy Bear Park, SSRSA Urban Runoff and mineral springs. Those discharges from the sewage treatment facilities are then analyzed for their compliance with present and future permits. The next discussion features water management and the problem of handling inflow/infiltration within the collection system. Finally, the overall SSRSA summer and winter material balance is discussed and evaluated in the context of existing information.

City of Steamboat Springs

The Steamboat Springs Plant basically serves the old city of Steamboat Springs. It also serves the Riverside district, the Fish Creek district, the Tree Haus District, and any excess flows greater than 120,000 gallons per day (gpd) from the Mt. Werner plant, via an interceptor constructed in 1974. The original facility was completed in 1967 and basically consisted of a two-stage aerated lagoon system. Between 1973 and 1974, a significant expansion to the original plant was engineered and constructed. The design flow for this new system was 1.65 million gallons per day (MGD) with peak flows of 2.08 MGD.

This new system consists of an aerated lagoon that is followed by clarification chamber, equipped with a sludge return system to the first aeration basin. The clarification chamber is then followed by a 3.8-day-polishing pond, before discharge to the Yampa River. Chlorination for pathogen control is not accomplished in a conventional contact unit but instead the chlorine solution is added at any one of three inlet points to the final polishing pond. Data collected by the USGS and the Colorado Department of Health, presented respectively in Tables II-8 and II-10; show that Steamboat Springs chlorination has not been consistently effective in controlling fecal coliforms.

Sludge disposal requirements for this type of treatment unit are minimal. Sludge is slowly collected on the bottom of the ponds and then removed once every three or four years. In the past this sludge has been spread on surrounding agricultural land.

The Steamboat Springs Plant has a nominal design capacity of 1.65 MGD with peak flow capacities of just under 2.1 MGD. Flow rates exceeding these design rates occur at the plant due to high infiltration and inflow rates averaging between 0.9-1.8 MGD. Thus, the overall hydraulic loading on the plant is affected dramatically by these sources. A schematic diagram of the Steamboat Springs facility is given in Figure 4. All sanitary sewage flows to the plant are by gravity except for flow from the small Riverside District.

Mt. Werner Water and Sanitation District

The Mt. Werner District was initially formed in 1965; construction of a collection system began in 1967 and the original sewage plant installation was in 1968. The Mt. Werner facility is an aerated lagoon-polishing pond system and is located on the north bank of the Yampa River, just south of the D&RGW RR tracks. Practically all sanitary sewage flows to this plant by gravity. The design capacity of the plant is 100,000 gpd. The Mt. Werner system also serves the Tree Haus Water and Sanitation District.

As development in the Mt. Werner area continued during the early 1970s, the system became overloaded. Thus, an interceptor was constructed in 1973 to divert and convey all flows greater than 120,000 gpd to the City of Steamboat Springs plant.

The present treatment plant consists of an aerated lagoon followed in series by a polishing pond. No pretreatment is provided. The aerated section of the plant lagoon has a detention time of 22 days at design rates. The effluent from that section then flows to a plain polishing pond that provides approximately another 37-day detention time, prior to discharge. Flow rates to the lagoon in the spring of 1974 ran as high as 500,000 gpd with infiltration flows as high as 300,000 gpd. During the peak Christmas tourist season of 1974-75, average flows

TABLE II-10

COLORADO DEPARTMENT OF HEALTH
WATER POLLUTION CONTROL DIVISION
RECENT PLANT EFFLUENT WATER QUALITY TESTS

Date Sampled	Time Sampled	pH (Std. Units)	Dissolved Oxygen mg/l	Residual Chlorine mg/l	Turbidity (JTU)	Settleable Solids mg/l	Suspended Solids mg/l	Fecal Coliform per 100/l	BOD mg/l	Color (Units)	Oil & Grease mg/l	Temp °F	Ammonia mg/l	Total Phos. mg/l	Total Volatile Solids mg/l	COD mg/l	Flow (MGD)	Total Solids mg/l	Type of Sample hr.comp	Kjeldah Nitrogen mg/l
WASTE DISCHARGE STDS		6-9	2.0 (min)	*0.1-0.5	30 (max)	0.5 (max)	30 (max)	**5000	30 (max)	30 (max)	10.0(max)									
STEAMBOAT SPRINGS																				
11/20/74	0900 1445	7.4	10.2		10	0.1	36	2200	28	30		39		6.84	77			281	6	31
3/ 5/75	1100 1700	7.7	3.2	--	15	0.1	14	22,000	27***	25		43	15	4.1			2.7		8	
MOUNT WERNER																				
2/28/74	1050 1800	7.3	1.2	0	6.4	<0.1	26	2200	21	5	4					50			8	
5/22/74	0900 1400	8.3	9.0	--	11.0	<0.1	31	880	29	40									6	
3/17/75	0900 1500	7.6	3.6	0.0	--	--	--	22,000	--	--	--	39	--	--			.226		8	
KOA CAMPGROUND																				
10/16/73	0950 1540	--	8.2		26.0	0.7	120	2400	36.5	50	5.3					142			7	
6/18/74	0830 1330	6.8	2.5	0.2	23		78	220,000	46	10							.0015		6	
SLEEPY BEAR																				
5/ 8/74	0830 1430	7.3	2.2		3.2	<0.1	14	220,000	16	8									6	
12/17/74	0915 1515	7.7	2.2	0.0	3.6	<0.1	11	5000	30	30		50	.7	8.8	116			611	6	10
STEAMBOAT II																				
11/20/74	0930 1430	7.7	4.8	0.2	8.1	0.1	24	2400	12	10		45	4.6	11.1	151			657	6	20
3/17/75	0945 1545	7.6	5.7	0.4	38	18	19	380	66	5	--	44	4.1	5.5					8	

* Applicable if wastewater is disinfected with chlorine
** Receiving waters classified B₁ have a maximum limitation of 1000/100ml
*** Results in 615 lbs BOD load which exceeds permit allocation

Compliance with Colorado Standards for the Discharge of wastes shall normally be based on 6-hour composite samples. If grab samples are taken, no parameter limitation shall be exceeded by more than 50% of the limitation.

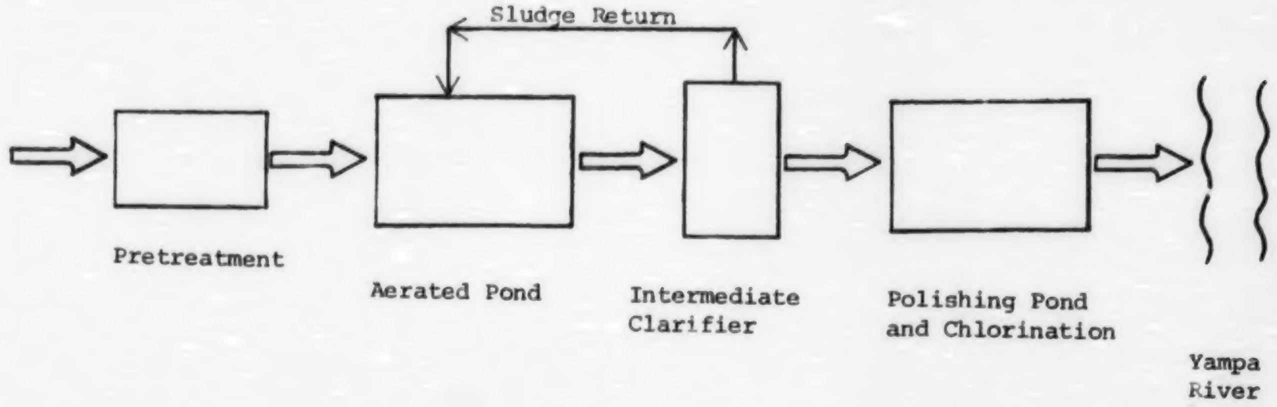

FIGURE 4

STEAMBOAT SPRINGS TREATMENT PLANT

SCHEMATIC FLOW DIAGRAM

of 400,000 gpd were noted with peak flows as high as 956,000 gpd. A process flow schematic of the Mt. Werner lagoon is given in Figure 5.

The bypass of excess flows to the City of Steamboat Springs plant has been one of the keys to a reasonably successful operation of the Mt. Werner facility. The treatment levels achieved at this plant since the bypass have been generally good. A summary of effluent testing by the Colorado Water Quality Division is given in Table II-10. A comparison with the regulations shows the plant to periodically be in violations of its suspended solids and BOD limitations. Adequate disinfection has also been lacking as the plant fairly consistently violates this standard. Consequently, these facilities will not be able to meet the 1977 standards for suspended solids, BOD_5 and NH_3.

Steamboat II Water and Sanitation District

The Steamboat II District sewage treatment plant is situated on the northwest side of the study area on a 3.6-acre site, located between the D & RG railroad tracks and the Yampa River. The collected sewage from the Steamboat II development flows by gravity to the plant site--where it must be lifted into the plant. It has design capacity of 75,000 gpd and consists of three small package units, each having a capacity of 25,000 gpd. The first module was put into service in 1971; the second and third units, between 1973 and 1974. Extended aeration is the basic process employed in these units and the three units operate in parallel. The sewage flow is sent directly to one of the three aeration basins and then on to the clarifier section. No pretreatment of grit removal is provided. The flow is then collected and sent to the polishing pond, chlorinated and discharged. The plant's aeration capability and sludge removal is not good between the various parallel units because of inadequate piping.

The effluent water quality from the Steamboat II plant has periodically been in violation of the current discharge permit. A summary of effluent water quality testing by the Colorado Water Quality Control Division and the USGS is given in Tables II-8 and II-10; additional data documenting past plant performance is available in the 201 Facilities Volume One report. The suspended solids, BOD, and fecal coliform parameter standards have often been violated in the past. If a program for upgrading this system is not initiated, the effluent wastewater quality will continue to be in non-compliance with Colorado State regulations. With proper operator attention, a plant of this type can provide adequate secondary treatment. However, it is not readily amendable to incorporation into a long range regional sewage treatment facility with advanced treatment requirements. Smaller plants like this one require more money to process a given amount of sewage than a larger one does; plus a network of smaller plants require more people to operate them than one larger plant does.

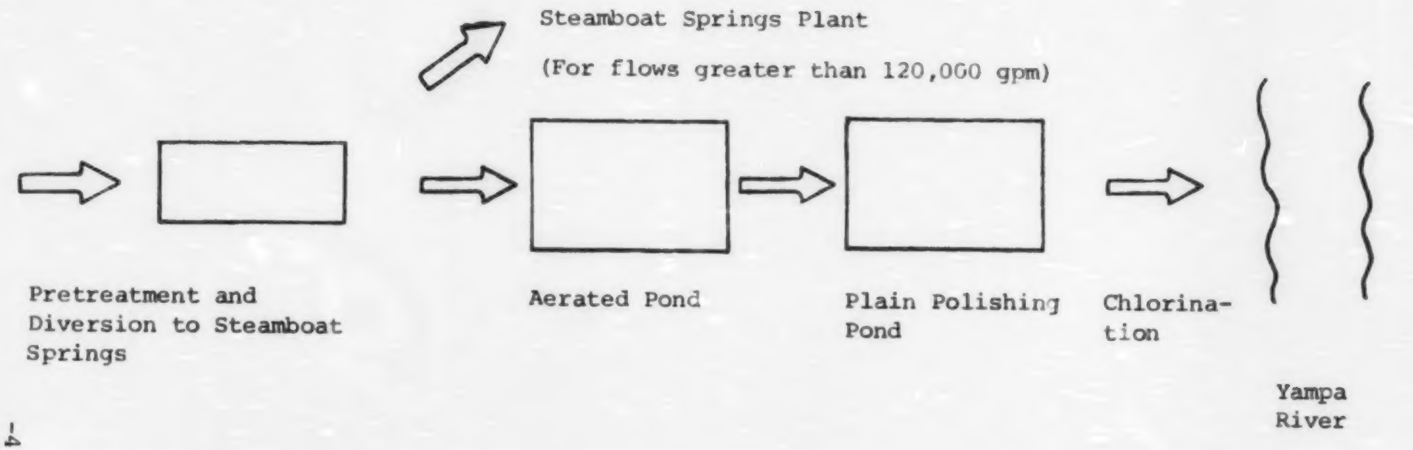
Steamboat Springs Plant
(For flows greater than 120,000 gpm)
Pretreatment and Diversion to Steamboat Springs
Aerated Pond
Plain Polishing Pond
Chlorination
Yampa River

FIGURE 5

MT. WERNER TREATMENT PLANT

SCHEMATIC FLOW DIAGRAM

KOA Park Treatment Plant

The KOA park treatment plant is a package plant, with an extended aeration basin followed by a polishing pond. This unit provides treatment only for the KOA Campground and a sanitary dump station, which results in highly variable loads. The unit was installed in 1974 and the pond was added in 1974; design capacity is 15,000 gpd. Pretreatment is not provided at this facility and the final polishing pond is utilized as a chlorine contact chamber. Effluent data gathered by the Colorado Department of Health and the USGS indicates that the KOA plant is in consistent violation of the State Discharge Standards. A summary of this data is included in Tables II-8 and II-10. Inspection evidence indicates that at times the sludge return is anaerobic and that overall plant operability is poor. With proper operation attention, a plant of this type can provide adequate secondary treatment for flows within design limitations. The system is not, however, amenable to incorporation into a regional facility requiring advanced treatment processes, for the same reasons mentioned for Steamboat II.

Sleepy Bear Trailer Park

The Sleepy Bear Plant provides treatment services for the Sleepy Bear Trailer Park, which is located 0.2 miles downstream of the KOA plant. Its process is an extended aeration-activated sludge type, with design flow of 15,000 gallons per day. It is essentially the same type of unit as the KOA plant previously described. No polishing pond has been added, however. Chlorination consists of adding hypochlorite tablets to the clarifier weir trough.

As shown in Tables II-8 and II-10, effluent monitoring data (1974-1975) indicate that in the past the plant has generally been in compliance with the suspended solids and BOD parameter limitations as governed by the State Discharge Standards. Disinfection treatment levels have not been adequate, however, and the plant has been in violation for this parameter. Again, this type of plant can provide adequate secondary treatment under the proper operating conditions but it is not amenable to incorporation into a regional wastewater facility requiring advanced treatment.

Bear Pole Ranch & Stephens Perry Mansfield School

The Bear Pole Ranch is located in Strawberry Park, about two and one-half miles northeast of the Steamboat Springs sewage lagoons, and has a maximum peak population of about 130 persons. The extended aeration facilities for the ranch were constructed in 1972 and then modified in 1975. The rated capacity of the system is 15,000 gpd although flows to the facility are usually less. The system consists of five underground aeration vaults and a sixth vault for chlorination-disinfection. A polishing pond provides a 3½-day detention time, then further treats the effluent before discharge to a nearby irrigation ditch.

The polishing is susceptible to algae accumulations and subsequently, suspended solids problems occur during certain times of the year. The facility appears to be operating efficiently although no water quality testing has been done since the 1975 improvements.

The Stephens/Perry Mansfield School is also located in Strawberry Park on the west side of the valley. This school is open only for the summer with programs in art and recreation. The maximum population is approximately 200 residents. Currently, their sewage facilities consist of about 25 separate septic systems that appear to be operating properly. However, some groundwater pollution probably does result from the leaching fields.

The current sewage facilities at both the Bear Pole Ranch and the Stephens/Perry Mansfield School are currently operating in a reasonably satisfactory manner. Because of their remote location, it is not advisable to attempt to tie these facilities into the proposed SSRSA treatment system. In the future, a land treatment irrigation advanced waste treatment scheme might be advisable.

SSRSA Urban Runoff

There is no question that the various point source discharges listed above contribute significant pollutant loadings on the Yampa River. In addition to these, however, studies performed by Wright-McLaughlin Engineers indicate that non-point sources also contribute substantial loadings to the area waterways. As might be expected, runoff from rainfall and snowmelt does become contaminated to varying degrees with pollutants from urban activities as it makes its way across rooftops, gutters, pavement, and lawns. Traffic, air pollution, animals, and humans and general urban activities continually provide a source of pollutants to be picked up during the next runoff event; the primary pollutants are similar to those found in normal sanitary sewage although perhaps in more dilute concentrations. Stormwater or snowmelt runoff is particularly damaging to certain segments of the receiving stream quality because it generally occurs in large volumes and thus produces a shock loading effect.

Wright-McLaughlin Engineers (October 1975) have carried out extensive investigations into the quality and quantity of these runoff flows. Their investigations involved both field sampling and computer modelling, using the Corp of Engineers "Storm" model. To facilitate this effort the SSRSA was divided up into various segments according to residential, commercial, and industrial uses. To put the results into a reasonable perspective, it is useful to compare the total runoff contribution on an annual basis to that of the previously mentioned point sources. These comparisons are given in Table II-11.

TABLE II-11

COMPARATIVE POLLUTANT LOADINGS
Urban Runoff vs. Point Source

	BOD (lbs/yr)	SS (lbs/yr)
Point Source (Based on 1983 Proposed Allocations)	86,870	86,870
Non-Point Source (1985 Results--"Storm" Model --Total SSRA urban area)	48,180	302,585
Ratio (Non-Point/Point Source-- Steamboat Springs only)	55.4%	348%

From Table II-11, it can be seen that the 1985 predictions indicate that almost 3.5 times as many suspended solids will be directed to the Yampa via storm runoff than by point source discharge. Likewise, about one-half as much BOD would be discharged via non-point source flows. Consequently, to maintain a responsible cost-effective approach to the Yampa basin water quality and to maintain the desired water goals, at least minimal control and treatment of non-point source urban runoff should be initiated. Otherwise, the areawide allocation program with its extensive treatment requirements cannot help but lose some of its significance.

Mineral Springs at Steamboat Springs

Mineral springs are apparent at various points along both banks of the Yampa River; the discharge comes from an upturned outcrop of the Dakota Protection Agency estimates (1971) the salt loading on the Yampa River from this source is about 24 tons per day. This flow is also high in fluorides. The conductivity for these flows is 1450 micromhos per centimeter for the hot springs east of town and 7500 for the cold springs west of town (R.E. Moran, 1976, USGS, oral communication).

Summary--Compliance with Current and Future Legal Limitations

As noted in the previous discussions, most of the SSRSA treatment facilities are periodically in non-compliance with their current wastewater discharge permits. As discussed earlier in the Water Quality Goals section, the Green River Basin Plan developed and assigned discharge allocation for the biochemical oxygen demand. These allocations are scheduled to take effect on July 1, 1977 although some of these allocations have already been written into current permits with implementation dates prior to July 1977. Compliance with these requirements is shown in Table II-12 for SSRSA facilities. This table shows that the current BOD limitations are only complied with at Steamboat Springs and Mt. Werner, and occasionally at Sleepy Bear. When the load allocations are implemented in future permits, none of the existing facilities are expected to comply. For suspended solids, only Steamboat II and Sleepy Bear regularly comply with the existing permits and only Sleepy Bear would be expected to comply with future permit limitations after July 1977. None of the existing systems perform well with regard to coliform discharges and none of them would be expected to meet future ammonia discharges without additional removal equipment.

Water Management

Both the City of Steamboat Springs (including the Fish Creek Water and Sanitation District) and Mt. Werner divert water from Fish Creek for their potable water source. The City also has a 1800 acre-feet reservoir near the Continental Divide from which it also draws water for domestic uses. Steamboat II, on the other hand, draws its supply from a well on the Yampa River floodplain. Principal uses for this water would include water for normal domestic uses and also for irrigation during the summer months.

An entire regional water system essentially acts as an interrelated supply and treatment system. Water quantities used must be treated, so the key to a sound and successful water management program does not solely rely on capital intensive water system improvements. For instance, because water consumption has been found to be a function of cost and general public awareness a more active "water conservation" awareness is usually facilitated by metered water systems, as contrasted to a flat rate billing system. The Steamboat Springs water system is currently not metered although proposals to initiate such a system have been suggested. Winter bleeding is a fairly common practice in the older sections of the City where freezing lines are a problem during the winter.

A second water system management technique is related to the control of undesired infiltration/inflows (I/I) into the sewage collection systems to the various treatment plants. If such flows can be minimized, less wastewater need be treated before discharge and overall treatment efficiency is improved. For example, average annual sewage flow for SSRSA in 1975 was estimated to be 0.56 MGD with I/I flows averaging between 0.71 and 2.36 MGD. Obviously I/I flows are often quite significant in this system.

The sources of I/I are cracked or broken pipe, improperly grouted connections, poor insulations, leaking manholes and roof drains. The main sources in the SSRSA area are infiltration into sewer lines and

TABLE II-12

SUMMARY--COMPLIANCE OF SSRSA TREATMENT FACILITIES
WITH CURRENT AND FUTURE PERMIT CONDITIONS

Treatment Facility		BOD_5	Parameter Suspended Solids	(Fecal Coliforms) Disinfection	NH_3
Steamboat Springs	Current	Yes	No-- (periodically)	No	No
	Future	No	No	No	No
Mt. Werner	Current	Yes	No-- (periodically)	No	No
	Future	No	No	No	No
Steamboat II	Current	No	Yes	No	No
	Future	No	No (possibly)	No	No
KOA	Current	No	No	No	No
	Future	No	No	No	No
Sleepy Bear	Current	No-- (periodically)	Yes	No	No
	Future	No	Yes	No	No

manholes, plus inflow from winter bleeding. Winter bleeding occurs when water users allow water to continuously flow through their pipes to prevent them from freezing during the winter. McCall, Ellingson and Morril estimated this amount to be 0.57 mgd during the months of December through April. Dismuke & Dismuke, Consulting Engineers, and Wright-McLaughlin Engineers investigated the infiltration during those months and found it contributes 0.66 mgd, for a total 1.23 mgd during the winter periods. These values increase even more during the spring runoff when I/I flows can peak to 3.715 mgd and average at 2.36 mgd. An estimate of all these flows is given for the entire SSRSA study in Table II-13 it does not include the winter bleeding of 0.57 mgd.

TABLE II-13

1975 I&I FLOWS (1,000 gpd)*

Basin	Basin Name	May Peak	May Base	Winter Infiltration
1.	Steamboat II	125	50	10
2.	Sleepy Bear/KOA	neg	neg	neg
3.	Dear Mtn./Elk River	na	na	na
4.	Riverside	25	10	10
5,6.	West Steamboat/Fairview	60	50	10
7.	Steamboat	2,645	1,870	20
8.	Willett Heights	15	10	500
9.	Fish Creek	30	20	neg
10.	Tree Haus	30	15	neg
11,12,13.	Mt. Werner & Interceptor	785	335	120
	Total SSRSA	3,715	2,360	660*

*Plus 570 winter bleeding equals a total winter I/I of 1,230
neg means a negligible amount
na means not applicable

In order to arrest the problem of winter bleeding, the Public Works Department of Steamboat Springs is working on two programs. One replaces some of the older lines to reduce leaks and to place them below the frost line. Another program installs metering devices to encourage water conservation. Their programs are intended to reduce winter bleeding as much as 50 percent.

The most important locations for I/I are the older areas of Steamboat Springs and Mt. Werner Water and Sanitation Districts. Corrective measures are deemed cost effective in these areas and should be undertaken. Wright-McLaughlin proposes that Steamboat's older lines be replaced with new ones paralleling the older ones. The older ones would remain as underdrains and would discharge into the Yampa River drainage. Such a system would cost approximately $423,000, including 25 percent for contingencies. The Mt. Werner improvement would cost less ($33,000) + 25% contingencies and would consist mainly of grouting existing pipe, replacing it and providing liners.

These improvements are designed to reduce peak I/I flow in May by 1.64 mgd, reaching a level of 2.075 mgd. The May base would be reduced to 1.269 mgd, a loss of 1.1 mgd. Reductions for the winter would amount to 0.46 mgd, bringing the level down to 0.2 mgd. This latter value is especially important to future treatment since highest wastewater flows would occur during the winter. A summary of these improvements is shown in Table II-14. This table shows a 55 percent annual reduction in I/I (208 million gallons), excluding winter bleeding, and an overall reduction of 51 percent (234 million gallons). It would cost an estimated 14.3¢ per 1000 gallons, clearly cost varying from 34.8 to 38.8¢ per 1000 gallons (Wright-McLaughlin Egineers, June 1977).

TABLE II-14

Estimated Present and Future I&I Flows
(1000 gpd)

	PRESENT ESTIMATE				PROJECTION AFTER IMPROVEMENTS			
		Sewer I&I				Sewer I&I		
MONTH	% of May Peak	Avg. Flow	Winter Bleeding	Total	% of May Peak	Avg. Flow	Winter Bleeding	Total
January	18	660	570	1230	10	200	400	600
February	18	660	570	1230	10	200	400	600
March	22	820	570	1390	18	370	400	770
April	36	1340	570	1910	29	600	400	1000
May	64	2360	-	2360	61	1260	-	1260
June	45	1670	-	1670	45	930	-	930
July	32	1190	-	1190	28	580	-	580
August	21	780	-	780	16	330	-	330
September	20	740	-	740	14	290	-	290
October	20	740	-	740	12	250	-	250
November	19	710	-	710	11	230	-	230
December	18	660	570	1230	10	200	400	600
Annual Flow		375 MG	87 MG	462 MG		167 MG	61 MG	228 MG

(MG means million gallons)

Water Material Balance

The flow of domestic water into the Steamboat Springs system does not equal or balance the amount flowing out of the system. Wright-McLaughlin Engineers have determined that 0.68 mgd of domestic water flows through the city's wastewater treatment plant (April 1976), while city officials contend that about 1.6 mgd of domestic water is supplied to the system. These figures suggest that 57.5 percent of the incoming water is lost from the system although usual losses vary between 20 and 40 percent (Metcalf and Eddy, 1972). The reasons for this disparity are unknown and would require additional study to elucidate.

III. Financial Condition of the Districts

In the draft EIS the issue of local financing was discussed in light of the troubled financial condition of some of the special districts. At the time of the draft EIS it was not clear how the local share of capital costs was to be obtained or what entity(s) would administer required debt financing. This issue resulted in a special study as part of this EIS to define administrative and financing options available to the community. This special study was prepared consistent with "Municipal Wastewater Treatment Works Construction Grants Program: Supplement No. 2", November 1976 which deals with local government costs of wastewater treatment works. This chapter reprints this special financial study presented to the community in December 1976. The City of Steamboat Springs after consideration of the following report, **is proceding according to Alternative** A: Contract Agency which is discussed in the latter portion of this chapter. In effect, the city will assume the local portion of capital costs recovering the "outside-city" share through increased service fees to these customers. It is also likely that Routt County will create a County Wastewater System which would enable the county to assume bond responsibility for out-of-city areas thus lowering the city's bond indebtedness. This approach (Alternative B) is also discussed in this chapter.

The Steamboat Springs wastewater management planning area contains the City of Steamboat Springs, six special districts (Mount Werner, Fish Creek, Tree Haus, West Steamboat, Riverside, and Steamboat II) and three private businesses operating their own systems (Sleepy Bear, KOA Campground, and Bear Pole Ranch). Steamboat II, Sleepy Bear, and KOA Campground operate their own package treatment plants discharging into the Yampa River, the Mount Werner operates a limited capacity (0.12 mgd) treatment plant. Most of the Mount Werner sewage and all sewage from the other special districts is treated, under agreement, by the City of Steamboat Springs Sewage Treatment Facilities. The Bear Pole Ranch, located north of Steamboat Springs, operates its own package treatment plant discharging into Butcherknife Creek, a tributary of the Yampa.

Despite considerable financial investment in wastewater treatment facilities over the past several years, to an extent that threatens bankruptcy to some ill-planned districts (see below), none of the facilities in the planning area meets Colorado effluent standards that existed prior to July 1, 1975, for reasons of undercapacity, infiltration and improper operation. (Wright-McLaughlin Engineers, October 1975).

SSRSA Entities

Three of the entities in the planning area will not be included in the financial analysis which follows, since they are not special quasi-municipal districts as described in Title 32 of Colorado Revised Statutes. Some pertinent comments on these entities follow:

Sleepy Bear

The Sleepy Bear Park Sewage Treatment Plant is privately owned and serves a 53-unit mobile home park. The plant does not meet current state effluent standards and is not adaptable to long-term use in the future consolidated system.

KOA Campground

The KOA Campground treatment plant, built in 1974, is privately owned and serves 21 permanent and 40 transient mobile home spaces. The plant, which has a current depreciated value of $16,842, does not meet current state effluent standards and has no long-range value for incorporation into the future consolidated system.

Bear Pole Ranch

The Bear Pole Ranch wastewater treatment facilities, built in 1972 and remodeled in 1975, serve a year-round ranch/camp with a peak maximum population of 130. Although it does not meet current state effluent standards for suspended solids (due to algae) it is operating below capacity and is recommended to continue operation with supplementary land treatment of effluent, under the ultimate master wastewater plan. (Ibid., pp. V-14, V-15).

Financial Condition of the Special Districts and City

The six special sanitation (actually, all are combined water and sanitation) districts in the study area vary considerably as to financial health. The relative strength of the larger districts lends stability to the regional area, considered as a whole. Yet some of the districts are in hazardous condition with relatively high mill levies, uncollectible debts, escalating (i.e., "ballooning") debt service payments on present bonded indebtedness (see Table III-1), and physically deteriorating facilities. Worse, the sewage collection and treatment systems for which they incurred this debt, many constructed within the last five years, need major repair or complete replacement under the master regional wastewater plan. The special districts in the worst financial condition -- one of them has already defaulted on its outstanding bonds -- are classical examples of the dangers of speculative resort subdivisions, created by optimistic resort land developers and sold to gullible buyers. Success of such ventures appears to require an ever-expanding boom economy with a steady supply of new buyers from outside the area, or careful state and local controls over the planning of such developments. Neither condition has existed in most resort boom areas of Colorado during the 1970's.

A brief description of each of the six special districts, as well as the City of Steamboat Springs, taken from the latest available financial reports, follows:

TABLE III-1

Consolidated Schedule of Payments of Principal and Interest on Bonded Indebtedness, City of Steamboat Springs and Six Nearby Water and Sanitation Districts (as of August 1976)

Year	Steamboat Springs[a]	Mt. Werner[b]	Fish Creek[c]	Tree Haus	West Steamboat[d]	Riverside	Steamboat II[e]	Total
1975							$18,023[f]	$18,023
1976	$352,397	$260,885	$50,086	$49,638	$16,725	$14,275[g]	51,856	795,862
1977	346,570	255,073	56,649	49,263	51,522	23,200	60,914	843,191
1978	337,603	263,686	54,763	48,888	45,000	27,850	59,146	836,936
1979	345,181	269,360	58,733	48,514	44,650	27,150	61,251	854,839
1980	340,707	267,911	60,415	78,140	45,100	26,450	59,229	877,952
1981	327,133	297,873	63,865	75,514	51,488	25,750	57,194	898,817
1982	332,371	317,153	67,015	77,888	50,325	30,050	59,973	934,775
1983	346,955	329,785	64,765	79,890	54,163	29,000	62,426	966,984
1984	299,999	331,033	57,515	76,514	52,612	27,950	59,674	905,297
1985	294,501	321,160	60,595	78,139	56,063	26,900	57,690	895,048
1986	293,915	237,118	58,355	79,263	54,062	30,850	58,055	811,618
1987	262,637	221,340	61,080	75,000	57,063	29,450	59,798	766,368
1988	257,107	205,575	63,480	75,600	54,625	28,050	61,103	745,540
1989	251,332	229,538	65,510	75,800	62,188	26,750	66,770	777,888
1990	250,194	162,326	67,210	75,600	58,938	30,250	48,375	692,893
1991	253,322	65,000	68,580	-	60,688	28,500	-	476,090
1992	260,392	61,250	74,620	-	57,100	26,750	-	480,112
1993	255,788	57,500	-	-	53,513	-	-	366,801
1994	255,264	53,750	-	-	34,950	-	-	343,964
1995	223,650	-	-	-	32,475	-	-	256,125
TOTAL	$5,887,018	$4,207,316	$1,053,236	$1,043,651	$993,250	$459,175	$901,477	14,545,123

a Includes five bond issues. All 1976 payments are included

b Includes June 1974 refunding issue and September 1974 G.O. issue. All 1976 payments are included.

c Includes three bond issues. Both 9/1/76 payments are included.

d Includes two bond issues, of 6/1/74 and 9/1/76. The 1976 payment is included

e Includes three bond issues

f October 1975 payment and all 1976 payments (to date) are in default.

g Includes December 1, 1976 payment. Excludes payment made June 1, 1976.

Mt. Werner Water and Sanitation District

This is the largest and financially soundest of the six districts. It has $2,575,000 in bonded indebtedness (following a refunding issue). The schedule of payments avoids unusual peaks, is current, and the present annual payments of $260,885 appear to be comfortably affordable under the district's current income structure. The recent trend in assessed valuation and levy is:

Year	Valuation	Property Tax Levy	Nominal Tax Revenue*
1973	$ 9,976,660	.012	$119,720
1974	14,151,710	.012	157,820
1975	14,133,210	.012	169,598
1976	18,392,270	.012	220,707

The main source of revenue for the district is water and sewer service fees, amounting to $238,414 in 1975. The financial impact of future wastewater facility improvements is not yet known.

Fish Creek Water and Sanitation District

The district has, as of 1976, $605,000 in bond principal (and another $448,000 in scheduled interest) outstanding. Payments increase from $50,086 in 1976 to $74,620 by the last payment in 1992. In addition, the district has $35,696 in notes due and payable, although payments are current only on the bonded debt. Ability to meet obligations depends largely on continued growth of the district.

In September 1974, the district adopted a policy of charging tap fees and readiness to serve fees against undeveloped property within the district which has water and sewer facilities available. On December 31, 1975, there were some $28,000 of such fees accrued and carried as accounts receivable, although an aggressive collection policy has reduced receivables by half since 1974. The property tax levy rose markedly in recent years, but dipped following the major increase in 1976 valuation. The 1975 valuation had dropped from 1974 because of a reduction in assessed valuation of the district's largest commercial property.

Year	Valuation	Tax Levy	Nominal Tax Revenue
1973	$ 979,350	.010	$9,794
1974	1,131,000	.025	28,275
1975	914,950	.027	24,704
1976	1,724,620	.01611	27,784

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1 Nominal tax revenue as shown in the Routt County Abstract of Assessment and Levies, rather than actual tax revenue shown in the financial statements of the district. Tax delinquencies and collection fees account for some of the difference.

Tree Haus Water and Sanitation District

This district has $575,000 in outstanding bonds, payable at $5,000 in principal (plus about $45,000 in interest) annually through 1979. Beginning in 1980, the payments balloon to between $75,000 and $80,000 annually through 1990. The developer of Tree Haus in 1972 entered into a "Guaranty of Payment of Tap Fees," but has met a large portion of this agreement by transferring title to the pumphouse and sewer easement to the district and by assigning notes to the district, amounting to $121,783 on December 31, 1975. Payments of interest is current on the notes, yet the district does not enjoy the liquidity which cash payment of tap fees would provide. The district's trend in valuation and tax levy is:

Year	Valuation	Property Tax Levy	Nominal Tax Revenue
1973	$213,440	.020	$4,269
1974	275,920	.020	5,518
1975	324,790	.01529	4,996
1976	950,590	.00644	6,122

West Steamboat Water and Sanitation District

This is a relatively new district, which began on October 16, 1973. The district issued $210,000 in bonds in 1974 to fund the construction of a sewer system south of the Yampa and obtained a grant of $122,000 from Northwest Colorado Council of Governments to construct sewer lines north of the Yampa, to accommodate existing development. Tap fees from sewer connections, although still uncertain, are expected to cover the first bond payment of $16,725, due in 1976. The bond payments rise to $32,325 on this issue by the final payment in 1993. In July 1976, the district also authorized a $275,000 bond issue ($570,334 in principal and scheduled interest) for water line construction. The future financial health of this young district is heavily dependent on continuation of the expected rate of growth. The trend in valuation and tax levy is:

Year	Valuation	Property Tax Levy	Nominal Tax Revenue
1973	(Not in Existence)		
1974	$671,470	.008	$ 5,372
1975	862,340	.015	12,935
1976	1,334,830	.029	38,710

Steamboat II Water and Sanitation District

Steamboat II is in the worst financial position of any of the six special districts in the immediate vicinity of Steamboat Springs, as a result of optimistic overbuilding of sewer lines in undeveloped filings. This overcommitment was compounded by the conversion of $44,500 in tap fees due to the district by its developer, who is unable to satisfy the district's judgment against him. As a result, Steamboat II is in default on several recent (1975-76) bond payments of its three outstanding issues. Default was postponed from 1974 only because Steamboat II issued a third bond issue of $59,000 which, after deduction of a $5,900 underwriting fee, allowed the district to meet its $51,194 annual payments on earlier bond issues.

The current assets of Steamboat II consist primarily of accounts receivable totalling $53,557 (as of December 31, 1975), largely from standby fees from owners of undeveloped lets. The district is actively pursuing foreclosure of tax liens against major debtors.

Although the developer of Steamboat II is in such financial difficulty that the district's accountant does not accrue the judgment against him as an account receivable, the district in 1976 acquired some personal property of the developer as a partial settlement. Subsequently, the district deposited funds sufficient to cover the defaulted 1975 bond payments. (The 1976 payments, however, remain in default.)

Despite its bleak financial history, Steamboat II has some hope of recovery. This depends on someone developing Filing No. 2, which has a substantial sewer line investment already in the ground, but provides no tap fee or service fee income to the district. To encourage development of this filing, Steamboat II has instituted readiness to serve fees and reduced its property tax levy (in 1975) to 10 mills, at the cost of raising tap fees to $1,600 and service charges to the unusually high level of $45/month. In 1976, the district increased its levy to 40 mills, subject to State approval. Steamboat II offers medium price housing, which is scarce in the Steamboat Springs area, and there is a reasonable possibility of future development which could restore financial health to the district, despite bond payments which balloon from $538,490 in 1975 (in default) to $1,465,000 in 1995.

The trend in valuation and levy is:

Year	Valuation	Levy	Nominal Tax Revenue
1973	$473,030	.010	$ 4,730
1974	487,430	.030	14,623
1975	538,490	.010	5,385
1976	915,560	.040	36,622

Riverside Water and Sanitation District

Although solvent, this district is in difficult financial circumstances due to a bonded indebtedness burden which was assumed based on growth projections which have not materialized. Riverside has a debt payment schedule which jumps significantly in 1978 and subsequent years, and the district already is experiencing difficulty in meeting present payments. The debt was incurred based on an expectation of outside-district tap fees from commercial development along the main highway. This development now seems doubtful, and the in-district undeveloped land is limited in quantity and currently experiencing only very limited building. The district has raised service charges but holds its mill levy at 20 mills to encourage lot development. A significant upturn in tap fee and service fee income seems necessary if the district is to continue to meet its bond payments. The trend in valuation and assessments is:

Year	Valuation	Property Tax Levy	Nominal Revenue
1973	$141,270	.020	$2,825
1974	156,660	.020	3,133
1975	178,550	.020	3,571
1976	331,230	.020	6,625

Summary of Conditions of Facilities

The six special water and sanitation districts currently own wastewater collection facilities that exhibit a high rate of inflow and infiltration and thus require substantial maintenance. Except for Mt. Werner's small (0.12 mgd) treatment plant which does not meet current effluent standards, none of the special districts own treatment facilities which are considered to have long-term value in the consolidated regional plan. Thus, each district will need either: (a) to spend additional funds to improve its own wastewater collection facilities and pay more to have its sewage processed in an upgraded treatment plant; or (b) to merge with other districts into a consolidated sanitation district, paying a share of the costs of constructing and operating the consolidated district's facilities. In either case, a substantial additional financial burden will be placed on the already-burdened special districts. At present, the districts together owe $4,748,000 in principal and nearly $10 million in interest over the next 19 years (see Table III-1).

City of Steamboat Springs

The City's financial condition is sound. Outstanding bonded indebtedness, as of December 31, 1975, is $3,232,000, subdivided as follows:

General Obligation Various Purpose Bonds	$2,285,000
Sales Tax Revenue Bonds	390,000
General Obligation Water Bonds	300,000
General Obligation Sewer Bonds	225,000
Sewer Improvement Revenue Bonds	42,000
	$3,242,000

Readiness to Serve Fees

Three of the districts in the Steamboat Springs service area (Fish Creek, Steamboat II, and Tree Haus) now charge readiness to serve fees to owners of undeveloped property in the district. Current (August 1976) fees charged are as follows:

Fish Creek: $18.13/month for single family lots only. (This is half of the service charge for developed lots.)
Steamboat II: $28/month per lot.
Tree Haus: $13/month per lot except for developer-owned lots.

Under Colorado law (C.R.S. 32.4.133,II) a readiness to serve fee can be assessed only under certain circumstances. Among the provisions is a requirement that the district must have a debt-to-valuation ratio of 1:3 to higher. By comparing the current debt amortization schedule (Table III-1) and the projected property valuation (Table III-2) for these three districts, it appears that the ratio of debt to valuation will fall below 1:3 by the years shown (unless additional debt is incurred).

Fish Creek: About 1983
Steamboat II: About 1985
Tree Haus: About 1985

TABLE III-2

PROJECTED PROPERTY VALUATION
(in 1976 dollars)

Year	Orig. Town	Mt. Werner	Fish Creek	West Steamboat	Steamboat II	Tree Haus	Riverside	TOTAL
1975	8,649,290	14,121,110	892,790	862,340	538,490	324,790	178,550	25,567,360
1976*	12,000,000	16,100,000	1,600,000	980,000	800,000	640,000	330,000	32,450,000
1977	12,425,000	17,125,000	1,627,500	1,069,000	822,500	712,500	335,000	34,116,500
1978	12,850,000	18,150,000	1,655,000	1,158,000	845,000	785,000	340,000	35,783,000
1979	13,275,000	19,175,000	1,682,500	1,247,000	867,500	857,500	345,000	37,449,500
1980	13,700,000	20,200,000	1,710,000	1,425,000	890,000	930,000	350,000	39,205,000
1981	14,020,000	20,860,000	1,751,000	1,560,000	922,000	988,000	353,000	40,454,000
1982	14,340,000	21,520,000	1,792,000	1,695,000	954,000	1,046,000	356,000	41,703,000
1983	14,660,000	22,180,000	1,833,000	1,830,000	986,000	1,104,000	359,000	42,952,000
1984	14,980,000	22,840,000	1,874,000	1,965,000	1,018,000	1,162,000	362,000	44,201,000
1985	15,300,000	23,500,000	1,915,000	2,100,000	1,050,000	1,220,000	365,000	45,450,000
1986	15,520,000	24,000,000	1,954,000	2,165,000	1,090,000	1,268,000	364,000	46,366,000
1987	15,740,000	24,500,000	1,993,000	2,230,000	1,130,000	1,316,000	373,000	47,282,000
1988	15,960,000	25,000,000	2,032,000	2,295,000	1,170,000	1,364,000	377,000	48,198,000
1989	16,180,000	25,500,000	2,071,000	2,360,000	1,120,000	1,412,000	381,000	49,114,000
1990	16,400,000	26,000,000	2,110,000	2,750,000	1,250,000	1,460,000	385,000	50,355,000
1991	16,620,000	26,340,000	2,149,000	2,830,000	1,293,000	1,498,000	388,000	51,118,000
1992	16,840,000	26,680,000	2,188,000	2,910,000	1,336,000	1,536,000	391,000	51,881,000
1993	17,060,000	27,020,000	2,227,000	2,990,000	1,379,000	1,574,000	394,000	52,644,000
1994	17,280,000	27,360,000	2,266,000	3,070,000	1,422,000	1,612,000	397,000	53,407,000
1995	17,500,000	27,700,000	2,305,000	3,150,000	1,465,000	1,650,000	400,000	54,170,000
1975 Mill Levy	**	.012	.027	.015	.010	.020	.010	

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* This Table was prepared prior to issuance of 1976 certification of property valuations. Actual certification resulted in values higher than shown by 16.9 percent.

** Steamboat Springs has a .015 mill levy which generated $354,948 in 1975. A specific mill levy is not assessed for sewage treatment facilities.

Projection of Revenues

As a prerequisite to any plan for consolidation of the governmental entities concerned with sanitation services in the Steamboat Springs area, it is necessary to determine their prospective revenues from which operating expenses and bonded indebtedness can be paid.

Ad valorem tax revenues are a function of assessed property valuation and the tax levy established by the district directors or city council. Revenues are subject to the limitation, established in 1975 by H.B. 1139, restricting districts from increasing their tax levies to raise more than 107 percent of the previous year's revenue, unless permission is obtained from the Colorado Division of Local Government or the district voters in a special election

Because ability to pay is closely related to property valuation, a projection of valuation was made for the City of Steamboat Springs and each of the six special districts in the study area. The methodology was as follows:

(a) Interviews were conducted with city officials, district directors, attorneys, developers and other interested parties to gain their informed judgment as to how fast each entity would develop. The consensus of these build-up estimates was compared with historic trends, and a judgmental projection was made in terms of units developed per year over the next 20 years.

(b) Preliminary 1976 property valuations, following a 1976 reassessment, were obtained from the Routt County Assessor. (The final valuations, following certification, are shown on pages 4 to 7, above. For the entire study area, the 1976 valuation is $37,934,050, or 16.9 percent more than shown in Table II.

(c) Projected property valuations from 1976 to 1995 were calculated, based on growth projections for each entity. These projections, which are in 1976 dollars without an inflation factor, are shown in Table III-2 and graphed in Figure 1.

In addition to ad valorem tax revenues, other sources of revenue to entities include tap fees, service fees, and readiness to serve fees. These revenues are subject to discretionary determination by the directors or councilpersons, and thus are not predicted here. Readiness-to-serve fees, which are controlled by statute, were discussed on page 7.

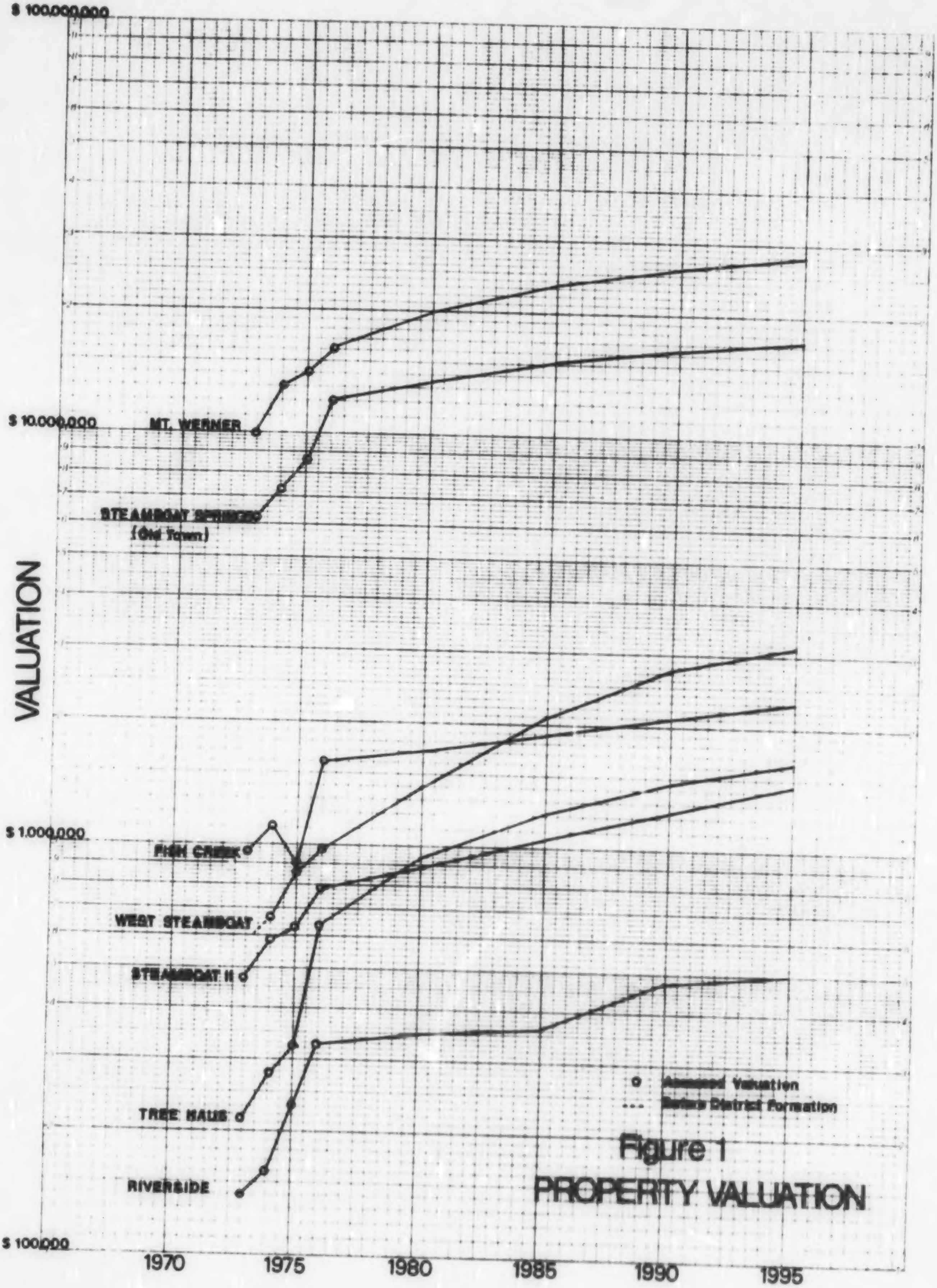

Figure 1
PROPERTY VALUATION

Existing and Anticipated Legislation Affecting Consolidation

Existing legislation in Colorado permits special districts to consolidate (C.R 32-1-133(1)) and subsequently for other districts to merge with the consolidated district (C.R.S. 32-1-119). Statutes also permit the creation of a county wastewater system (C.R.S. 30-20-401 to 30-20-422). Another statute authorizes creation of a metropolitan sewage disposal district (C.R.S. 32-4-506(1)) to serve two or more municipalities. However, the metropolitan sewage disposal district is the only form of special sanitation district which can exist in the same area as an existing special sanitation district (C.R.S. 32-3-103).

Still another possibility, never tested in Colorado, is the formation of a contracted wastewater management agency (C.R.S. 29-1-202 to 29-1-203). A final possibility is creation of a regional service authority (Colorado Constitution, Article XIV, §17, effective Jan. 1, 1972) which is authorized by the Constitution to exist in a single county; however, the enabling legislation (C.R.S. 32-7-104(2)(a)) currently requires R.S.A.'s to include all the territory of a minimum of two counties. Finally, there are some recent statutes, and statutes expected to be introduced in the 1977 legislative session, which impact on the proposed consolidation of sanitation entities in the Steamboat Springs area. Each of these topics is discussed at greater length in the following sections.

Consolidation of Districts

Colorado Revised Statutes 32-1-113(2) establishes the procedure for consolidating two or more existing districts. The procedure requires passage of resolutions, a public hearing, and an election by persons affected. Subsequent to consolidation, other districts can merge with the consolidated district as described in C.R.S. 32-1-119. The bonded indebtedness of each district, at the time it becomes a part of the consolidated district, remains an obligation of the persons owning property within its boundaries (C.R.S. 32-1-117). Thus there can be a variable property tax levy within the consolidated district, depending on which predecessor district area the property is in.

County Wastewater System [1]

As part of the powers granted counties under Colorado statutes (C.R.S. 30-20-401 to 30-20-422), a county may create a water system or sanitation system, or both. In addition to the specific powers and restrictions contained in this discussion, the County Commissioners are given other powers incidental to the operation of the system. The governing body is the Board of County Commissioners.

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[1] This subsection and the following three subsections are adapted, with permission, from Lyon, Collins & Co., Inventory of Potential and Existing Water Quality Planning and Management Agencies, Pueblo Area Council of Governments, Denver, December 1975.

The County Commissioners may operate the water and sanitation system from service charges only. They may not use funds derived from an ad valorem tax levy. There are no restrictions on the amount of debt which may be issued. However, only revenue bonds are authorized under the statute. Expenditures and budget controls are exercised by the Board of County Commissioners. The authority to plan, regulate and enforce regulations pertaining to a wastewater system is inherent within the statute.

General land use planning and building construction regulation are already exercised by the County Commissioners.

County Improvement District

The County is also authorized to create, upon petition of a majority of the electors owning not less than a majority of the assessed valuation in the affected area, an improvement district. The powers granted to such a district include provision of sewer and storm drainage collection systems. Specifically excluded from the district powers is the provision of wastewater treatment.

The District may be created by resolution and the governing body is the Board of County Commissioners. Both revenue and general obligation bonds are authorized and the District is granted the power of ad valorem taxation. The sum of all debt may not exceed 25 percent of the assessed valuation of the District.

It appears that the utilization of the county improvement districts would not be possible unless it is utilized in conjunction with the above described county wastewater system powers or under contract with another government such as a city or a special district which has a sewage treatment facility.

Metropolitan Sewage Disposal Districts

C.R.S. 32-3-103 specifies that no special sanitation district can be formed within any area served by an existing sanitation district. There is one exception to this prohibition against "umbrella" or superimposed sanitation districts -- C.R.S. 32-4-501, which authorizes metropolitan sewage disposal districts to serve two or more governmental entities having sanitation functions.

Only one metropolitan sewage disposal district is in existence in the State -- that is the Denver Metropolitan Sewage Disposal District No. 1, covering a portion of the Denver metropolitan area. A similar District could be created in other portions of the state.

A metropolitan sewage disposal district is a special district type of government and like all other special districts its powers and duties are defined and limited by State statute (C.R.S. 32-4-501). The primary power and duty of the district is the collection and treatment of sewage.

Unlike other special districts, a metropolitan sewage disposal district can only be formed by action of two or more municipalities which do not need to be contiguous. C.R.S. 32-4-501 to 32-4-547, which authorize metropolitan sewage disposal districts, broadly define municipality as "...a city, a city and county, an incorporated town, a sanitation district, or a water and sanitation district,..." Full power of provision of sewer services to the residents of a municipality is retained in the municipality's government, and the district is assigned the task of the interception, carring and treating the sewage from the municipalities.

Creation of the district does not require an election. An ordinance may be initiated by one governing body and adopted by the other governing bodies specified in the ordinance.

The governing body is a board of directors appointed by the executive of each municipality with approval of the governing body of the municipality. Each municipality is entitled to one representative per 25,000 population or fraction thereof. However, any municipality which has 50 percent or more of the total population of the metropolitan district shall have 50 percent of board membership.

The governing body has the authority to delegate certain of its operating powers to an executive committee.

The powers and duties of metropolitan sewage disposal districts are summarized on Table III-3, below.

The district may levy an ad valorem tax not to exceed 3/4 of a mill (total, not annually) in its first five years of existence. After that time, the power to levy taxes is not granted.

The sewage disposal district has broad powers to establish service charges to the municipalities. These charges are in turn passed on to the residents of the municipality. The statute specifically authorizes the utilization of ad valorem taxes by member municipalities to pay the charges levied by the metropolitan district.

The metropolitan district may issue bonds, following an authorizing election. Although these bonds are revenue bonds, they are considered "indirect general obligation bonds" since the district has the power to mandate member cities or districts to levy ad valorem taxes to pay the service charges from which the bond payments are made. Bond counsel have successfully proposed several safeguards to assure the security of holders of metro district bonds.

Table III-3

SUMMARY OF POWERS & DUTIES AUTHORIZED TO METROPOLITAN SEWAGE DISPOSAL DISTRICTS

	Authorized	Not Authorized
A. Operations		
1. Construction and operation of a sanitary sewage collection and treatment system.	X[1]	
2. Construction and operation of a storm drainage system.		X
3. Construction of sanitation or storm drainage facilities through special benefit districts.		X
B. Regulatory		
1. Adopt rules and regulations governing the system.	X	
2. Requirement for habitations to connect to the system.	X	
3. Control over connections to the system.	X	
4. Control over type wastewater discharges.	X	
5. Prohibition of specified harmful wastes.	X	
6. Regulation of land use through zoning.		X
7. Regulation of construction through building codes.		X
C. Revenues & Finance		
1. Property taxes and other general types for sanitation purposes.	X[2]	
2. Monthly service charges for sanitation services.	X[3]	
3. Charges for connection to system.	X	
4. Charges for availability of service to vacant land.	X	
5. Extra charges for treatment of industrial type wastes.	X	
D. Debt Financing		
1. General obligation bonds for wastewater purposes.		X
2. Revenue bonds for wastewater purposes.	X	

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[1] Authorized for a collection and treatment system which intercepts a municipal system - but not a system serving residents and businesses directly.

[2] Limited to 3/4 mill (total) for the first five years only.

[3] Charges for service are levied to the municipality.

Expenditure and budget controls are exercised by the board of directors.

The metro sewage disposal district has the authority to plan its own activities and future expansion. However, it does not have the power to plan for land usage or to enforce building codes. This authority is retained in the member municipalities. The district has authority to regulate and enforce regulations dealing with the sanitation system.

Contracted Agency

The Colorado voters in 1970 adpoted an amendment to Article XIV of the Constitution allowing contracting between all types of governmental agencies. The subsequent enabling statute reads, in part, as follows:

> 1. Governments may cooperate or contract with one another to provide any function, service, or facility lawfully authorized to each of the cooperating or contracting units, including the sharing of costs, the imposition of taxes, or the incurring of debt, only if such cooperation or contracts are authorized by each party thereto with the approval of its legislative body or other authority having the power to so approve.
>
> 2. Any such contract shall set forth fully the purposes, powers, rights, obligations, and the responsibilities, financial and otherwise, of the contracting parties.
>
> . . . .
>
> 4. Any such contract may provide for the joint exercise of the function, service, or facility, including the establishment of a separate legal entity to do so. (29-1-305, C.R.S. 1973, as amended).

The key to such an approach is the agreement between the existing governmental agencies. The powers, duties, governing board and other particulars would have to be specified in the agreement.

Despite its apparent legality, the provision of a contracted agency approach permitting imposition of taxes by one agency on property of another has never been tested in Colorado. Further, it founders on the unwillingness of bond attorneys to issue bonds backed by a contractual agreement among districts; they would require a vote of the property owners. Thus, the contracted agency is not considered to be a feasible alternative for the Steamboat Springs area, unless one agency assumes the entire bonded debt.

Regional Service Authority

The voters of the State approved in 1970 Article XIV, § 17 of the Colorado Constitution, allowing for the creation of Regional Service Authority (RSA). RSA's have the functions approved by the electorate at the election creating the RSA and those functions added at any subsequent elections. One of the powers which could be provided by an RSA is wastewater management and planning.

The 1970 Constitutional Amendment allows RSA's to be formed within the boundaries of one county. However, the subsequent enabling legislation enacted by the state legislature requires that an RSA be comprised of an area encompassing at least two counties. This provision would have to be changed before an RSA would become legislatively feasible in the Steamboat Springs study area.

Applicability of Federal Bankruptcy Law

One statute recently adopted by the Colorado legislature will have a significant impact on the future of special districts in the Steamboat Springs locality. This is S.B. 44 (50th Gen. Assy.), "Concerning the Authorization of Certain Special Districts to Avail Themselves of Federal Bankruptcy Laws." S.B. 44, which became law in 1976 (C.R.S. 32-1-1001 to 32-1-1006), permits water and sanitation districts to file bankruptcy petitions and, with district approval, to issue new bonds having lower interest rates and extended payment periods. Such bonds would replace existing bonded debt.

Prior to the passage of S.B. 44, districts had to obtain state consent before they could enter into bankruptcy procedure. Under the new law, a district may file under Chapter IX of the Federal Bankruptcy law if it can prove mathematically that it would be unable to pay bonded indebtedness even with a 100 mill tax levy. To successfully refinance under Chapter IX, a district must obtain approval of at least half its bondholders, who must represent two-thirds of the value of the bonded debt. A plan of recovery, showing future district viability, is required.

Organizational Alternatives

In considering the organizational alternatives, or management plan, whereby the sanitation entities can be consolidated, the essential requirement is legality. Even if legality is assured, there remain questions of political and administrative feasibility.

Questions of financial equity also must be faced in planning for consolidation. If the entities are consolidated, certain existing facilities can be incorporated into the master facilities plan but other facilities will be abandoned. Should the costs of constructing the new facilities be shared equally? Or if the law permits, should an effort be made to adjust the costs according to the value and condition of the facilities which each separate entity brings to the consolidation?

Another question of financial equity revolves around how the operating and maintaining costs of the consolidated sanitation entity should be allocated. For example, if one district has collection lines which are in poor condition, with high infiltration and inflow, should a higher share of maintenance costs be allocated than with a district having few maintenance problems? Should an extra share of operating costs be allocated to areas of the district which may require pumping of effluent, while others utilize gravity? It should be noted that consolidations are often politically difficult to arrange, and the representatives of the individual entities may find it necessary to overlook strict accounting advantages in order to smooth the ultimate agreement.

It may, in fact, be necessary for certain financially healthy districts to agree to subsidize districts in weaker financial condition, in order to induce them to join the consolidated district. This may be done from a sense of community, as it may be the only alternative to bankruptcy or prohibitively high property taxes for certain districts. It may also be the only way to obtain a federal government grant for regional wastewater treatment. If so, the residents of the financially healthy districts may need to agree to some indirect subsidy of the weaker districts (e.g., jointly sharing the financial task of a bond issue, or agreeing to share equally in total district operating and maintaining costs).

Some of these aspects are discussed at greater length below.

The following alternative mechanisms for organizational consolidation are not considered feasible, for the reason specified:

Regional Service Authority

The enabling legislation requires that an RSA be comprised of an area encompassing at least two counties. This is clearly impractical for the Steamboat Springs area, and there is not present likelihood that this restrictive legislation will be changed.

County Improvement District

The function of wastewater treatment is specifically excluded by statute from the powers of county improvement districts.

Metropolitan Sanitation District

Under the 1947 statute (C.R.S. 32-3-101 et seq.), no new special district having sanitation functions can legally be formed to serve territory already in an existing sanitation district. The exception is a metropolitan sewage disposal district, authorized by the later statute (C.R.S. 32-4-501 et seq.).

A New Regional Water and Sanitation District

It is conceivable that a regional water and sanitation district could be formed under C.R.S. 32-4-103, providing all existing districts having similar functions were first to be dissolved as provided by C.R.S. 32-4-133. Because present districts in the Steamboat Springs area have bonded debt, dissolution is impractical if not impossible.

A Consolidated Water and Sanitation District

The existing water and sanitation districts could consolidate under the provisions of C.R.S. 32-1-113(1). However, the delays which would be required for districts to consolidate their existing debt make this option undesirable, and there is substantial likelihood of unwillingness on the part of some existing districts to give up control of their power to levy taxes to the board of directors of a new and unfamiliar district. (By contrast, if a stable metropolitan sewage disposal district were formed and operated successfully, the existing districts might ultimately be more willing to consider consolidation.)

The more feasible alternative mechanisms for consolidation of sanitation entities are:

A. Contract Agency. The city will take leadership in issuing bonds for financing and operating the regional sanitation system, serving other entities through contracts.

B. County Wastewater System. This system would provide sewage collection and treatment for all out-of-city areas, and contracting with the City of Steamboat Springs for construction and operation of the regional treatment facility.

C. Creation of an "umbrella" Regional Sewer Service District. This district would include the entire study area, and would necessarily take the form of a metropolitan sewage disposal district, since any other form of umbrella sanitation district is prohibited from organization within the boundaries of an existing sanitation district.

Alternative A

CONTRACT AGENCY

1. All six special water and sanitation districts would remain in existence to be responsible for repayment of current debt; operation and maintenance of potable water systems (distribution mains, and in some cases water supply and treatment facilities); and establishment of property tax levies and service charge rates.

2. KOA and Sleepy Bear would organize, together or separately, special water and sanitation districts containing their property and possibly other adjacent areas which may require service in the future.

3. City of Steamboat Springs obtains EPA grants and issues bonds (revenue or general obligation) to raise the local share for construction of regional sewage treatment plant and connecting interceptor lines.

4. City operates new regional treatment facility, processing sewage from the city and all special districts outside city limits through contract.

5. City levies sewage treatment charges to all users. In-city users will be billed individually. Out-of-city users may be individually billed or the district billed on a volume basis.

Alternative B

COUNTY WASTEWATER SYSTEM CONTRACTING WITH CITY

1. Routt County creates, by resolution, a sewage collection and treatment district which assumes sewage collection and treatment responsibility for all areas outside city limits (i.e., Riverside, West Steamboat, KOA, Sleepy Bear, Tree Haus, and Steamboat II).

    1a. Routt County may also assume potable water supply responsibility for the above entities, and the responsibility for bond redemption. In this subalternative, the special districts would be dissolved and the County would assume their present functions.

2. Routt County issues revenue bonds to pay for a portion of the local share of the cost of the regional sewage treatment plant and general obligation (or revenue) bonds to pay for interceptor lines connecting the above-named areas to the major outfall line. (NOTE: Only property in the above-named areas would be obligated to pay for G.O. bond repayment.)

3. City issues bonds to pay for other portions of local share.

    3a. City may assume potable water supply responsibility for Fish Creek and Mt. Werner, and responsibility for bond redemption. In this case, the special districts would be dissolved.

4. Routt County would negotiate a contract with the City of Steamboat Springs for construction and operation of a regional sewage treatment facility. The contract would specify the relative shares of the construction cost (local share only) and the future sewage treatment charges for out-of-city customers.

5. Routt County levies a property tax on the sewage collection and treatment district and determines service charges for out-of-city customers.

    5a. If Routt County also assumes potable water supply and debt retirement functions, it might assess differential tax levies and service charges in various parts of the district, as appropriate.

6. City levies property tax on sewage collection and treatment works and determines service charges for city customers.

Alternative C

CREATION OF REGIONAL SERVICE DISTRICT
(METROPOLITAN SEWAGE DISPOSAL DISTRICT)

1. The City of Steamboat Springs and other entities would adopt by resolution an ordinance creating a metropolitan sewage disposal district. The area of the district would include the City of Steamboat Springs, the six special districts (Mt. Werner, Fish Creek, Tree Haus, Riverside, West Steamboat, and Steamboat II), and the KOA and Sleepy Bear properties, after they took legal steps to participate.

2. A board of directors would be appointed to govern the metropolitan district. Each special district would appoint one director. The executive of the City of Steamboat Springs would appoint, with approval of the city council, half of the total number of directors.

3. The district would take steps (i.e., arrange a "joint and several obligation contract") to maximize bond security and would hold an election to authorize issuance of revenue bonds to pay the local share of the construction cost of regional facilities.

4. The metropolitan district would become the grantee for the EPA design and construction grants and would construct a regional sewer treatment facility and interceptor lines.

5. The metropolitan district directors could levy a small (up to 3/4 mill for the first 5 years) property tax on the property within the district and would set service fees for sewer service. The district would be responsible for debt service of the new bond issue, and would mandate the levying of ad valorem taxes by member entities, to assure payment of service fees from which bonds would be repaid.

6. The metropolitan district would assume operation and maintenance responsibility of all elements of existing sewer systems except collection lines. Some existing facilities would be abandoned. The district also would operate and maintain the newly-constructed facilities.

   6a. The new metropolitan district may contract with city for operation and maintenance of regional system.

7. The City of Steamboat Springs and each of the six or seven special districts would continue to be responsible for potable water service, maintenance, and expansion of service collection systems, and service of existing debts.

8. In the future, the special districts might choose to dissolve and their collector sewer maintenance and debt service responsibilities could be assumed by the metropolitan district. Their water service responsibilities might be assumed by a co-existing water district.

Financial Effects of Alternatives

The financial effects of the three feasible organizational alternatives described in the previous section are forecasted and analyzed below. To assist in the analysis of the three cases, a payment schedule has been developed which will repay the anticipated costs of constructing Phase I (in 1977) and Phase II (in 1985) of the proposed regional sewage treatment plant and necessary connecting interceptors.

It was assumed in this analysis that the existing bonded indebtedness of each entity would be paid off by revenue from the property lying within the present boundaries of each entity (as the law requires). Although it is possible that some entities may be required to take action pursuant to Chapter IX of the Bankruptcy Act, or alternatively that some healthier districts may indirectly subsidize the debt of weaker entities, neither alternative has been included in the forecasted payment schedule. Similarly, no reliance was made on possible grants from the Colorado Division of Local Government, to assist needy entities in wastewater treatment construction.

Because of the considerable existing bonded debt, the payment schedule for the 201 project has deliberately placed the greater burden in the last half of the 20-year repayment period, to allow weaker entities to recover their financial health during the 1977-1985 period. The payment schedule has been provided through the courtesy of Stern Brothers & Co., who followed our specifications in calculating future property valuation and in assuming a quite conservative interest rate on the new bonds. The assumption used by Stern Brothers & Co. are as follows:

1. That once a maximum debt level is reached, an attempt would be made to level off the debt service.
2. That an interest rate of 8% on the bonds is sufficiently conservative. At this time a rate should be below 8%.
3. That the cost of Phase II would be substantially higher by 1985. Again, being conservative, we have programmed in a $3,000,000 bond issue.

The letter of September 20, 1976 from Stern Brothers & Co., with attached debt repayment schedules, is included as Appendix A.

Table III-4, which follows, shows the prospective tax levy for each of the entities, by multi-year intervals, required to repay existing debt and to carry a proportionate share of the new bonded debt. This table has been calculated by dividing scheduled payments on existing debt (Table III-1) by forecasted valuation (Table III-2) and adding the prospective mill levy for new debt as calculated by Stern brothers & Co. It should be noted that this table assumes that new debt capital recovery is handled by property taxes; thus the annual service charge would include only operation and maintenance costs (see Table III-5).

It should be noted that the mill levies shown in Table III-4 are considered conservatively as the maximum levies possible. This is because the forecasted valuations in Table III-2 understated the 1976 (and subsequent) valuations by 16.9 percent, and because Stern Bros. used a conservative 8 percent interest rate on bonds. As a result, the mill levies shown in Table III-4 should accomodate any likely inflationary increase in construction cost of the regional sewage treatment facilities.

TABLE III-4

ESTIMATED PROPERTY TAX LEVY TO REPAY EXISTING AND NEW BONDED DEBT, FOR CITY OF STEAMBOAT SPRINGS AND DISTRICTS IN STUDY AREA, IN MILLS BY MULTI-YEAR INTERVALS

	(Year)				
Entity	1977	1980	1985	1990	1995
Old City	29.1	27.1	23.4	15.4	12.8
Mt. Werner	16.1	15.1	18.4	16.4	12.8
Fish Creek	36.1	37.1	36.4	42.4	12.8
Tree Haus[1]	70.1	86.1	68.4	62.4	12.8
West Steamboat	49.1	34.1	31.4	31.4	12.8
Steamboat II	75.1	69.1	59.4	49.4	12.8
Riverside	70.1	77.1	78.4	88.1	12.8

Alternative A, Contracted Agency

The City of Steamboat Springs would obtain EPA grants and issue bonds (general obligation or revenue) to pay the local share of construction of the 201 project. In turn, each out-of-city user (directly or through their district) would be billed for a service fee. This fee would pay operation and maintenance costs for the new facilities[2] plus a capital recovery charge to repay a proportionate share of the new bonded indebtedness assumed by the city. The city would assume the full risk of bond retirement and would be dependent on the continued receipt of service fees from outside-the-city users to help repay the bonded debt.

The following Table III-5 shows projected service charges for outside city customers at multi-year intervals.

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[1] The mill levy projections for Tree Haus do not consider the revenues received from developer's notes. Such note interest is the major source of debt service revenue, thus 1976 tax levies are only 6.44 mills.

[2] As determined by Wright-McLaughlin in Vol. 2, Steamboat Springs Facilities Plan.

TABLE III-5

TOTAL SEWER SERVICE CHARGES (ANNUAL PER DWELLING UNIT) FOR CUSTOMERS OUTSIDE CITY OF STEAMBOAT SPRINGS

Year	New Debt Capital Recovery	Oper. & Maint.	Total
1977	$12.29	$29.62	$41.91
1980	33.64	30.88	64.52
1985	63.20	35.23	98.43
1990	152.92	34.21	187.13
1995	188.22	33.18	221.40

The inside-city customers (including Mt. Werner and Fish Creek) would pay a comparable amount for sewage service. The O & M portion must be uniform[1] on all users, in- and out-of-city. The City may opt to recover the capital recovery portion from in-city users by either the uniform service charge (as in the above table) or through ad valorem taxes. (Ref. Section 204b (1) of the Federal Water Pollution Control Act of 1972.)

Each of the existing special districts would remain in existence, with the following functions:

(a) To raise revenue through ad valorem taxes, perhaps supplemented by service fee surcharges and/or readiness to serve fees, to retire the prior bonded indebtedness.

(b) To monitor their contract with the City of Steamboat Springs, i.e., to assure performance under the contract.

(c) Perhaps to bill individual out-of-city users, paying a single invoice to the city each month. Alternatively, the City could contract to handle billing of individuals.

Administratively, Alternative A gives lead authority for financing, construction, operation and maintenance of the regional program to the City of Steamboat Springs. This situation may not be politically favored by all entities which would be served by the system under contract. Under Alternative A, Mt. Werner and Fish Creek would not be subject to double taxation; however, they would have less authority than at present. Ultimately, they could choose to dissolve and transfer their remaining responsibilities (i.e., taxing to retire prior debt) to the City. Once their debt is retired, the City could initiate a dissolution election, pursuant to the Colorado Statute on Special District Dissolution (C.R.S. 32-4-133).

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[1] Equal rate based on ¢ per 1000 gal. of influent flow.

Alternative B, County Wastewater System

Under Alternative B, the City of Steamboat Springs would issue bonds (G.O. or revenue) on its portion of the construction cost. Routt County would issue revenue bonds on its portion of the treatment plant cost, and G.O. or revenue bonds on its portion of the interceptor lines. If G.O. bonds are chosen, they would be secured only by out-of-city property to be served. (County property outside the wastewater system service area would not be taxed nor charged for service.)

The costs for in-city users would be essentially identical to those in Alternative A. The costs for out-of-city users would probably be somewhat higher than in Alternative A because of the statutory requirement to issue revenue bonds, rather than G.O. bonds, on the treatment plant portion.[1] This could require a premium of 1 to 1 1/2 percent on interest, based on current conditions. Also, under Alternative B, the County could recover the capital cost portion of costs from ad valorem taxes rather than a uniform service fee (as in Alternative A). This would place a higher burden of cost on the higher-valued property. These determinations of equity (ad valorem tax vs. uniform service fee) would be made by the County Commissioners.

Under Alternative B, the City would assume less bond risk and thus might obtain a better interest rate than under Alternative A.

Administratively, Alternative B would give authority to a new entity not now directly involved -- Routt County -- and would give the County essentially equal authority with the City in Determining the future of the wastewater system. If the City Public Works Department operated the plant, the County's role as contract customer could result in interference with line of command in operating the facilities. With a properly written contract, this problem could be minimized.

Alternative C, Regional Sewer Service District (Metropolitan Sewage Disposal District)

A new "umbrella" regional sewer service district would be formed to finance, construct, operate and maintain the regional treatment facility. This necessarily would take the form of a metropolitan sewage disposal district.

With authority to issue bonds backed by authority to mandate taxes on the entire study area, including the city, the regional district should obtain a favorable bond interest rate. The costs would probably be essentially the same as in Alternative A. The directors of the metropolitan district, who would be appointed by each participating entity, could authorize only very limited (a maximum of 3/4 mill) ad valorem taxes, and would repay the new bonded debt by uniform service charges. Operation and maintenance costs must come from service fees.

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[1] This, of course, assumes that under Alternative A, the City chooses to issue G.O. bonds rather than revenue bonds.

The new metropolitan district would assume much of the administrative control of wastewater treatment now held by the City and special districts. Those districts could continue in existence to handle repayment of prior debt or could ultimately dissolve and assign this responsibility to the metropolitan district.

Water Supply Service

In the preceding sections we have not dealt with the subject of water supply. Since each of the special districts is a water and sanitation district, they could remain in existence and handle water supply service as they currently do, i.e., by their own supply or by contract with the City of Steamboat Springs. Obviously, before any of the existing districts dissolves, it must be assured that its water supply functions are assumed by a responsible successor.

IV. Other Existing Environments

The existing environment of the project area is described in a variety of books and reports and is not repeated here in all its detail. However, its major features are described, and special emphasis is accorded to the aquatic and agricultural environments. The total range of topics includes physiography, geology, soils, biology, climatology, air quality, odor, history, population, land use, socio-economics, transportation, noise, solid waste, demographics, recreation, aesthetics, culture and other federal or state projects.

Physiography

The study area that is delineated by the Steamboat Springs Regional Services Authority encompasses 37½ square miles. Its shape ranges from flat stream valleys to steep mountain slopes. The lowest elevation occurs in the Yampa River floodplain on the west border of the area (6600 ft.) and the highest occurs near its east border, at the base of Mt. Werner (8000 ft.). The river flows through the center of the study area, where it has an average slope of 22 feet per mile and an average floodplain width of 800 feet. Along its floodplain are numerous river terraces, flat mesas and irregularly-shaped plateaus. Tributaries of the Yampa are minor and include Walton, Burgess, Fish, Spring, Butcherknife, Soda and Slate Creeks.

Geology

The geologic history of the area is not of paramount importance to the project although some of its resultant features are mentioned in the section entitled Evaluation of the Alternatives. The major mountain range is called the Park Range and it began its uplift about 60 to 70 million years ago. Since that upthrust, inland seas or rivers have covered the area and deposited softer sedimentary rocks. Most prominent among these rocks are the formations called Morrison, Dakota Sandstone, Mancos Shale and Browns Park.

Along the Yampa River are located layers of unconsolidated material, called alluvium. This material was placed there by glaciers and river flow, and its constituents range from clay-sized particles to large boulders. The southern part of the Yampa River alluvium is comprised of black organic silt and clay, three to eight feet in thickness. Underlying this are layers of gravel-clays, well-sorted sands and gravel. Further to the north the organic layer thins out and by Steamboat Springs it disappears. From this point on, the surface alluvium is mainly sand and gravel, varying in thickness between 20 and 40 feet.

The major geologic hazards for the project include flooding and earthquakes. The 100-year floodplain is depicted in Study Map 1, which shows the coverage area for a flood occurring with an average frequency of one in 100 years. The ramifications of its occurrence are discussed in the Evaluation of the Alternatives. The possibility of an earthquake in this area is remote but it could happen. The most significant fault in the area extends through Steamboat Springs in a north-south direction and it is not known to be active.

Soils

Many of the soils in the area are good for farming yet they are usually limited by slope and lack of moisture (Charlie Hogelin, SCS, Steamboat Springs, personal communication). This latter factor is less easily handled and often leads to erosion. Those areas that are currently irrigated are shown on Study Map 2. However, for the purposes of this discussion, only those sites along the Yampa River are being considered. These sites are shown in Figure 5.

The sites to be irrigated are located on work silt loam (2A,C) and an unnamed valley bottom loam (12A,AW). The work silt loam is a well-drained soil that occurs on gently sloping terrain. Its surface layer, called the A horizon, is about 20 inches thick and is comprised of silt loam. Its permeability is moderate and its available water capacity for plants is high. The B horizon is also 20 inches thick, containing silty clay loam. This horizon has a lower permeability and available water capacity than the A horizon does. The C horizon is also 20 inches thick and contains silty clays. The permeability of this horizon is lowest of the three due to its high percentage of clay. All horizons have a high shrink-swell potential and a moderate to low frost-action potential. The depth to bedrock is greater than five feet and the depth to seasonal high water table is greater than six feet. When these soils are used for irrigation, their percolation rate is generally slow.

The unnamed valley bottom loam (12A,AW) is a moderately deep, somewhat poorly-drained soil. Its A horizon is nine inches thick with a silt loam consistency. Permeability of this horizon is moderate, while its available water capacity for plants varies from moderate to high. Its pH ranges from 6.6 to 7.8. The B horizon has a clay loam consistency with a 12-inch thickness. Its permeability is lower than the A horizon's permeability and its available water capacity for plants is moderate to high. Its pH is comparable to the A horizon's pH. The C horizon ranges from 21 to at least 60 inches and is comprised of gravely silt loam. It has a very high permeability due to its large particle size and a

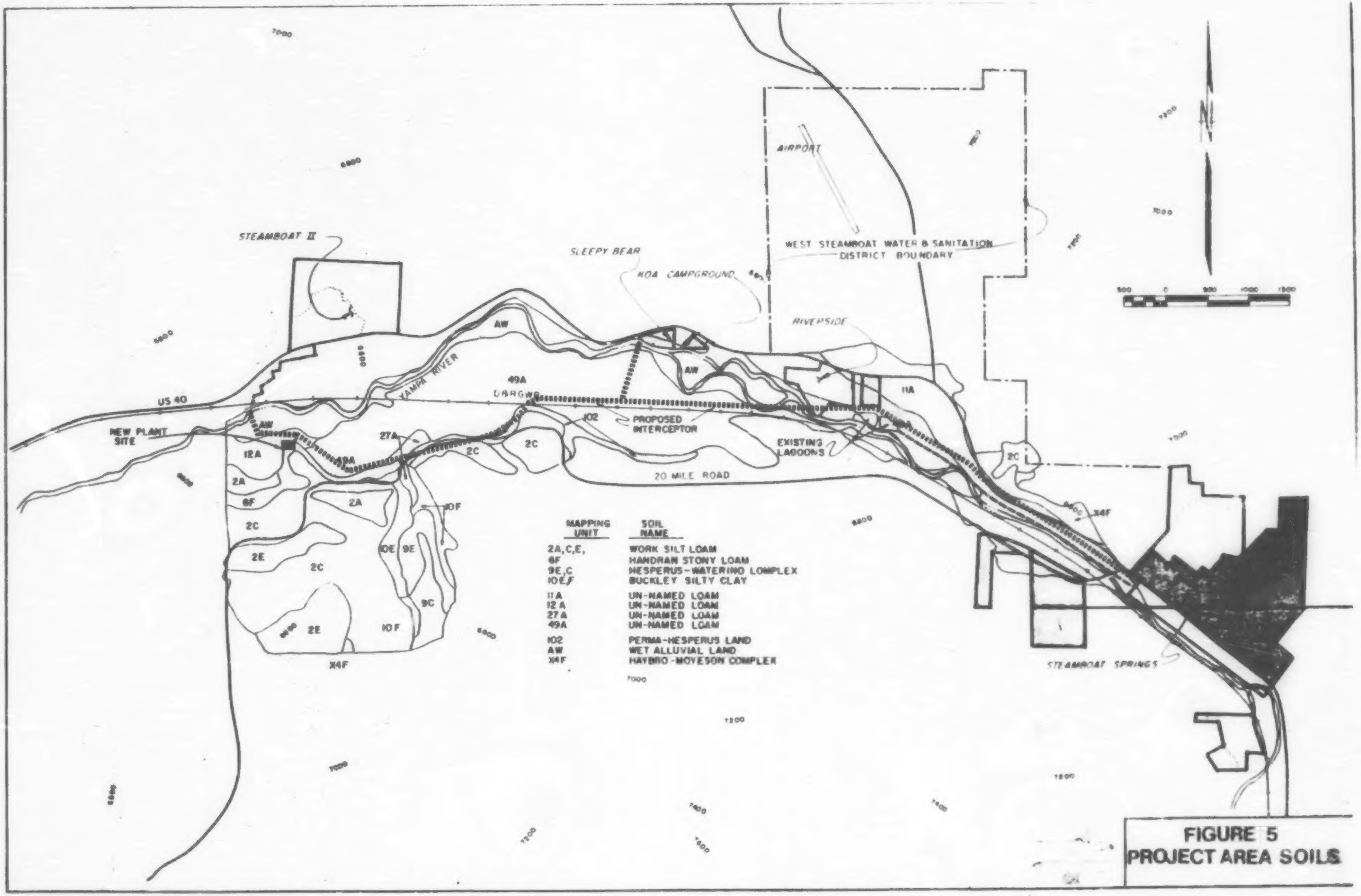

FIGURE 5
PROJECT AREA SOILS

moderate available water capacity for pH. The pH of this horizon is moderately alkaline, varying from 7.9 to 8.4. All horizons possess a low shrink-swell capacity although their frost action potential is high. This latter potential is due to the low to moderate permeability of the A and B horizons (0 to 21 inches), plus the 24-inch seasonally high depth to the water table.

The other major soils to be impacted by the project are represented by the mapping units 11A and 49A. These soils are crossed by the proposed new collectors.

The 11A soil is a deep, well-drained clayey soil that is formed in level alluvial terrain. The A horizon possesses a silty clay loam; the B horizon, a clayey loam; and the C horizon, a silty clay loam. This profile takes water very slowly yet holds a large amount. The depth to bedrock is greater than five feet and the depth to the seasonal high water table is greater than six feet. Its potential for revegetation is fair since its top soil is somewhat clayey.

The 49A soil is a deep, somewhat poorly-drained soil, located on level to nearly level terrain. It has a loamy consistency to a depth of about 26 inches. Beyond this depth the materials are river sands and gravels. Because of this condition, the depth to seasonal high water table is about two feet. The soil above the water table has a moderate permeability and a moderate water holding capacity for plants. Its potential for revegetation is fair.

Biology

The discussion on biology is divided into one section on the aquatic environment and one on threatened and endangered species. The aquatic environment is important because it presently receives the secondary effluent from the existing sewage operations, and it may receive portions of the tertiary effluent in future operations. The threatened and endangered species are discussed because their continued existence could be threatened by the project and its growth ramifications.

Aquatic

The Yampa River is the major aquatic environment of the project area. Studies have shown its ecological health to be marginal due to several aspects of its physical environment (Wright-McLaughlin Engineers, October 1975). This has resulted in a poor habitat for fish and a poor to average habitat for aquatic insects. An explanation for this situation is offered in the text that follows, organized according to physical conditions, plants, insects, and fish.

The physical status of the river was analyzed by Dr. Robert W. Pennak in July 1975. He organized the Yampa River into three ecological units

(Wright-McLaughlin Engineers, October 1975). The first area (I) extended from the south boundary of the study district to a point just short of Steamboat Springs, covering a distance of 2.5 miles. The second area (II) extended 1.5 miles through Steamboat Springs, and the third area (III) extended 4 miles from below the city to the district's west boundary.

The river banks through area I were characterized by irrigated grasslands or hayfields and were frequently grazed by cattle. When the activities of these cattle were combined with haying operations next to the river, natural streamside vegetation was often removed. This condition reduced the amount of overhanging cover necessary for good trout habitat. It may also have allowed eroded particles to be added to natural background levels and irrigation return flows, which combine to layer the river bottom with organic silt or clay.[1] Potential effects of this siltation include clogging gills and mouth parts of aquatic insects, smothering eggs and developing young of insects and fish, plus reducing the quality of breeding habitat for fish.

The total range of components in the river's bottom included boulders, rubble, gravel and sand-silt (Table IV-1). The percentage of sand-silt in area I was 27, which was several times greater than values from the other areas. Although this analysis did not indicate a total coverage with silt, it did indicate sufficient silt to layer the bottom between scattered boulders, rubble and gravel.

Bank stability in area I was judged to be 61 percent by Dr. Pennak (Table IV-1). A bank was considered stable if no soil sloughing occurred during the previous year and unstable if sloughing did occur. Several banks were investigated in each ecological area.

The average width of the river through area I was 96 feet. Its average pool depth was about three feet and its average riffle depth was about two feet. This pool depth was too shallow for proper trout habitat.

The length of the river through area I was about 2.7 times longer than it would be if it assumed a straight-line course. The resultant meander would have provided good habitat for trout, except that the physical conditions of shallow pools, siltation and loss of natural riverside vegetation precluded it from happening.

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[1] The Routt County Planning Commission unanimously approved a resolution calling upon EPA to strike any reference to agricultural impact on upbasin riverbank erosion.

TABLE IV-1

PHYSICAL CONDITIONS OF YAMPA RIVER[1]

July 1975

Parameter	% Area I	% Area II	% Area III
Bottom Composition			
Boulder	12	14	17
Rubble	17	66	67
Gravel	44	14	11
Sand-Silt	27	6	5
Bank Stability			
Stable	61	96[2]	76
Unstable	39	4	24

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[1] Taken from the Steamboat Springs Wastewater Management Report, 201 Facilities Plan, Volume One. Wright-McLaughlin Engineers, Denver, Colorado, October, 1975.

[2] Artificial stabilization.

River conditions in area II were slightly poorer than in area I, due to encroachment from the city and stream channelization. Stream channelization had brought about a straighter channel and a more homogeneous stream bottom, both of which were poor for aquatic life. The river was often bordered by dikes, levees, railroad beds or streets, and the pools and riffles were less well-defined than in area I. The natural trout population was small along this stretch although plantings by the Colorado Division of Wildlife were used to supplement it. These plantings could have actually hindered the natural trout populations, however, since they had to compete for scarce food with the introduced hatchery trout.

Conditions for trout improved downstream in area III. The river here had more meander than the straight-channel pattern of area II and its pools and riffles were deeper, longer and better defined. Humanly-induced disturbances occurred above and below the KOA campground, where channelization has straightened the river course. Hay cutting and cattle grazing also added its effects by removing native vegetation near the river and fostering erosion.

The aquatic plants of the Yampa are generally contained in a film on the bottom called periphyton. This film contains not only plants but also bacteria, fungi, protozoans, tiny animals and the tissue of a multitute of dead organisms. This dead tissue usually makes up the majority of the film's substance and it is actively consumed by bacteria and other tiny organisms. The plants in the film are generally one-celled organisms called algae. A list of these organisms is shown in Tables IV-2 and IV-3. They account for the majority of plant production that occurs within the river's boundaries.

A qualitative collection of these organisms was accomplished on August 25, 1975 by the USGS at stations Y3 and Y8 (Table IV-2). Station Y3 was located at the USGS gaging station in Steamboat Springs (Study Map 1) and station Y8 was located about one and one-half miles upstream from the Elk River. The dominant algae found at the Steamboat station (Y3) were the diatoms Navicula and Nitzschia and the blue-green alga Lyngbya. The latter two were characteristic of the putrid zone of decomposition, which follows a discharge of sewage (U.S. Dept. of Interior, 1966). The dominant algae at station Y8 were the green alga Stigeoclonium, the diatom Nitzschia, and the blue-green alga Lyngbya; they, too, were found in the decomposition zone downstream from sewage discharges.

Additional periphyton was sampled by the USGS on September 5, 1975, emphasizing the algae's biomass and productivity. The results of this sampling have been combined with results of the earlier sampling (August 25, 1975) in Table IV-3. Their productivity was reflected in chlorophyll pigments a and b, which convert sunshine, carbon dioxide, and water into organic compounds and oxygen. The density of chlorophyll II varied from 6.3 milligrams per square meter at station Y2 to

TABLE IV-2

PERIPHYTON OF THE YAMPA RIVER

August 25, 1975[1]

Organism Name	Common Name	Station Y3	Station Y8
Chlorophyta	Green alga		
Chlorococcales			
Characiaceae			
Schroederia		p[2]	
Occystaceae			
Ankistrodesmus		p	p
Scenedesmaceae			
Scenedesmus		p	p
Oedogoniales			
Oedogoniaceae			
Oedogonium		p	
Ulotrichales			
Chaetophoraceae			
Stigeoclonium			D[3]
Chrysophyta			
Centrales	Diatom		
Coscinodiscaeae	Centric		
Cyclotella			p
Melospira		p	p
Pennales	Pennate		
Achnanthaceae			
Achnanthes		p	
Cocconeis		p	p
Cymbellaceae			
Cymbella		p	p
Epithemia		p	p
Diatomaceae			
Diatoma		p	p
Fragilariaceae			
Synedra			p
Gomphonemataceae			
Gomphonema		p	p
Naviculaceae			
Navicula		D	p
Nitzschiaceae			
Nitzschia		D	D
Tabellariaceae			
Tabellaria		p	
Heterosiphonales	Yellow green alga		
Vaucheriaceae			
Vaucheria			p
Cyanophyta	Blue-green alga		
Oscillatoriales	Filamentous		
Oscillatoriaceae			
Lyngbya		D	D
Oscillatoria			p
Chroococcales	Coccoid		
Chroococcaceae			
Agmenellum			p

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[1] Preliminary information collected by the USGS and subject to further scrutiny and verification.

[2] Present. [3] Dominant.

TABLE IV-3

BIOMASS OF PERIPHYTON ON YAMPA RIVER

	September 5, 1975				August 25, 1975	
	Station Y1	Station Y2	Station Y4	Station Y5	Station A3	Station A6
Dry Biomass (g/m^2)	6.5	15.0	6.1	9.5	15.0	1.7
Ash Biomass (g/m^2)	4.6	12.0	4.2	6.1	3.5	1.2
Chlorophyll a (mg/m^2)	5.0	6.3	5.0	4.8	4.1	3.8
Chlorophyll b (mg/m^2)	0.8	0.6	0.6	0.4	0.1	0.3

4.8 at station Y5; this lower density occurred just below the Steamboat Springs sewage outfall.

Associated with the phytoplankton are larger plants, rooted in the river's rocky bottom. They exist in small quantities and do not account for a significant percentage of the river's plant production. Additional plant material is incorporated into the river from terrestial sources. Plants from this source could account for more production than is created by the aquatic plants, especially during the fall. Nonetheless, the health of the river's own plants is essential if healthy trout populations are to be revived.

The insects of the Yampa are a primary source of food for the trout population; biologists call them benthic organisms. They feed on periphyton, organic matter suspended in the stream, and sometimes each other. They are comprised largely of two-winged flies and caddisflies although mayflies, beetles, mites and snails can also be found.

The USGS verified this assessment on August 25, 1975 with a benthic survey at the same two sites sampled for periphyton. The results of their analysis are summarized in Table IV-4, according to organism name, common name and density. The densities represented the numbers of organisms taken within one square foot at each station. Their sampling near the gaging station (Y3) was dominated by two-winged flies although it received secondary contributions from caddisflies. This situation was more pronounced upstream where the flies were clearly the dominant insect. Further downstream at station Y8, caddisflies became the co-dominant bottom insects, along with the two-winged flies.

When the total variability of insect types was considered, it was found that ecological diversity decreased below the area's point source discharges. Ron Eddy of EPA discovered this phenomenon on the benthic samples he collected during September 1975 (Publication in bibliography). Although the total number of organisms stayed about the same at his stations above and immediately below the city's sewage outfall, ecological diversity decreased immediately below the outfall. This means that below the sewage outfall, a greater number of organisms were concentrated within a fewer number of species (or other taxanomic categories).[1]

In addition to the diversity of these organisms, their population numbers and the weight were also indicators of the river's health. The numbers found at station Y3 by the USGS were 65 per square foot or

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[1] Other ecological diversities have been developed by Libby Aimes of Colorado State University at Fort Collins, Colorado; her work was done for BLM and her publication is in progress.

TABLE IV-4

BENTHIC INVERTEBRATES OF THE YAMPA RIVER

August 25, 1975[1]

Organism Name	Common Name	Density (no./ft^2) Station Y3	Station Y8[2]
Hydracarina	Water mite	1.3	1.3
Coleoptera	Beetle		
Elmidae	Riffle beetle		
Optioservus		0.7	0
Zaitzevia		2.3	3.0
Diptera	Fly		
Chironomidae	Midge fly		
Microtendipes		5.3	4.7
Nanocladius		0	4.7
Orthocladius		16.3	9.0
Pentaneura		0	2.7
Phaenopsectra		6.0	0
Polypedilum		0	4.7
Tanytarsus		3.3	0
Rheotantarsus		0	13.7
Rhagionidae	Snipe fly		
Atherix		3.7	3.1
Simuliidae	Black fly	1.0	1.7
Ephemeroptera	Mayfly		
Baetidae			
Baetis		2.0	5.3
Ephemerella		1.0	2.7
Ephemeridae			
Tricorythodes		0.7	3.7
Heptageniidae		1.0	0
Plecoptera	Stonefly		
Pteronarcidae			
Pteronarcella		1.0	0
Perlodidae			
Arcynopteryx		0	0.7
Trichoptera	Caddisfly		
Helicopsychidae			
Helicopsyche		0.3	0
Hydropsychidae			
Cheumatopsyche		0	3.0
Hydropsyche		10.7	39.7
Arctopsyche		0	1.0
Hydroptilidae			
Leucotrichia		6.7	0.7
Ochrotrichia		0.3	1.3
Leptoceridae			
Athripsodes		0.3	0
Oecetis		0.7	0
Basommatophora			
Physidae	Pond snail	present	not present
Total Density (no./ft.^{2})		65.0	106.7
Wet Biomass (g/m^2)		3.56	4.37

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[1] Preliminary data supplied by the USGS, which is subject to further scrutiny and verification.

[2] Equivalent to USGS stations Y64 and Y63.

699 per square meter. Densities below 1000 organisms per square meter were considered a poor benthic population (Dr. R. Pennak, Wright-McLaughlin Engineers, October 1975), so the Yampa's bottom insects near Steamboat Springs would be expected to support low populations of reproducing trout. The downstream station (Y8) was slightly more productive and supported 106.7 organisms per square foot or 1148 per square meter. This station was near the Elk River and could support an average population of reproducing trout.

Many factors of water quality affect the abundance and diversity of the benthic insects. Nutrients like phosphates and nitrates can increase their food supply and stimulate their growth. Other factors, like suspended solids, can clog their gills and smother their developing young. This latter action is most likely in ecological area I, just upstream from Steamboat Springs, where fine organic material and clay are layered between the rocks on the bottom.

The most abundant fish in the study area is the native mountain whitefish, followed by the introduced rainbow trout (Table IV-5). The whitefish is normally not considered a game fish although it has good eating and sporting qualities. Specimens weighing up to four pounds and measuring 28 inches in length have been reported. The rainbow trout are planted by the Colorado Division of Wildlife and normally attain lengths of eight to 14 inches. A naturally-reproducing population of rainbow trout also exists and competes for food with the transplants. Other trout of the study area include brown and brook trout. Brook trout usually occur at the higher elevations and browns at the lower. Brown trout are the hardier of the two and grow to large sizes.

As mentioned previously, the reproducing trout in the Yampa River are faring poorly in the study area. The depth of the river's pools is too shallow for good trout habitat, especially between the south boundary of the study area and the northwest boundary of Steamboat Springs. Also, a lack of vegetative cover diminishes the quality of their habitat throughout most of the study area. Their potential food supply from the benthos is rated poor near Steamboat Springs and average near the Elk River. The heavy siltation south of Steamboat Springs also could be reducing the quality of their breeding habitat (Ron Eddy, EPA, comment on Draft EIS).

Other fish faring poorly in the Yampa River include the Colorado squawfish, bonytail chub, humpback chub and the humpback (razorback) sucker. In Colorado, these species are found only in drainages of the Colorado, Gunnison, Yampa and White Rivers. A recent survey by the Colorado Division of Wildlife showed a few Colorado squawfish in the lower Yampa, just above Maybell, Colorado. None of the others appeared in

TABLE IV-5

POPULATION STATUS OF FISH OF THE YAMPA RIVER[1]

Scientific Name	Common Name	Population Status Abund.	Com.	Lc	Scarce
Salmo giardneri	Rainbow trout	x			
Salmo trutta	Brown trout		x		
Salmo clarki pleuriticus	Colo. River cutthroat trout				x
Salvelinus fontinalis	Brook trout		x		
Prosopium williansoni	Mountain whitefish	x			
Rhinichthus osculus	Speckled dace		x		
Castostomus catostomus	Western longnose sucker				x
Castostomus commersoni	White sucker		x		
Castostomus latipinnis	Flannelmouth sucker		x		
Castostomus discobolus	Bluehead sucker		x		
Semotilus atromaculatus	Northern creek chub				x
Pimephales promelas	Fathead minnow				x
Richardsonius balteatus	Redside shiner			x	
Cottus bairdi	Mottled sculpin		x		
Xyrauchen texanus	Humpback sucker[3]				x
Gilia cypha	Humpback chub[2,4]				x
Gilia elegans	Bonytail chub[4]				x
Ptychocheilus lucius	Colorado River[2,4] squawfish				x

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[1] Taken from Wright-McLaughlin Engineers, Oct. 1975, information based on studies and observations by Colorado Div. of Wildlife, plus input from other sources.

[2] Endangered species, U.S. Dept. of Interior.

[3] Threatened species, Colorado Division of Wildlife.

[4] Endangered species, Colorado Division of Wildlife.

the Yampa River study areas although Colorado wildlife officers suspect some bonytail chubs may live below Craig, Colorado. Several reasons for the decline in these endangered species include stream channelization, bank erosion, and the elimination of backwater swamps (Dr. Robert Pennak, for Wright-McLaughlin Engineers, Oct. 1975). Other factors include competition from introduced species like redside shiner and channel catfish (Dave Langlois, Colorado Division of Wildlife, personal communication).

Threatened or Endangered Species

Several animals in Colorado have been designated as threatened or endangered by the U.S. Fish and Wildlife Service and Colorado Division of Wildlife. All animals designated as such by the U.S. government are classified similarly by the Colorado government, although local conditions may vary and are recognized as being different. The Colorado government has also placed several species on their threatened-and-endangered list that are not included on the national list. Consequently, the Colorado list is more extensive than the national list and it more accurately reflects local conditions.

When the Colorado list is compared to species in the project area, it is found that only one occurs there regularly. This animal is the greater sandhill crane, which has nests throughout the willow stands along the Yampa River.

Air Quality

In this section the importance of study area climatology is discussed, followed by a review of air quality. The odor potential of wastewater facilities is then discussed and related to interviews with local citizens.

Climatology

Steamboat Springs has a climate referred to as Highland Continental, characterized by low precipitation, large fluctuations in daily temperatures, low humidity, moderate amounts of wind and abundant sunshine. Summer days are warm but seldom hot; summer nights are cool. Winter nights are quite cold, particularly along the Valley bottom; however, the days are more comfortable because of low humidity and usual bright sunshine. The prevailing wind direction into the area is from the west. These winds arrive comparatively dry after their long travel over land and their moisture loss in passing over mountains. Relatively open areas to the north and northwest permit easy access for many storms from the north, compared to the more protected areas of western Colorado.

It is common in the winter to board the gondola at Mt. Werner in the morning with the temperatures around 10°F and arrive at the top in 25°F conditions. This is characteristic of temperature inversions that hold cold air near the ground with warm air aloft. These conditions are quite prevalent and intense in the Study Area. Figure 6 summarizes some inversion measurements taken near Hayden, 25 miles to the west. This data was recorded as part of the environmental assessment for that area's coal-fired power plant.

The average annual precipitation is about 30 inches along the mountains, just east of the Study Area, and 20 inches in Steamboat Springs. The City experiences unusually large annual rainfall for its elevation, attributable to the sharp rise in elevation directly to the east. Annual snowfall averages 165 inches and provides light powder conditions on numerous winter days. Heavy accumulations often make Mt. Werner a "powderhound's" delight following its periodic storms. Monthly variation in precipitation is shown in Figure 7, taken from 30 years of recorded data. Also shown is variation in monthly temperature averages. Wright-McLaughlin's "Volume One" compares these averages to daily maximums, which demonstrate that a large variation in daily temperatures affects the length of the growing season.

Land areas above 9000 feet have, on the average, have an annual growing season of about 50 days, with south-facing slopes considered possible exceptions (Gathers, 1973). The growing season is considered to increase by approximately two weeks for every 1000 feet in elevation below 9000 feet (Table IV-6).

TABLE IV-6

AREA GROWING SEASON

	Elevation	Growing Season (days)
	9000	50
	8000	65
	7000	80-90
	6000	100
Steamboat Springs	6700	
Proposed land treatment area	6600	

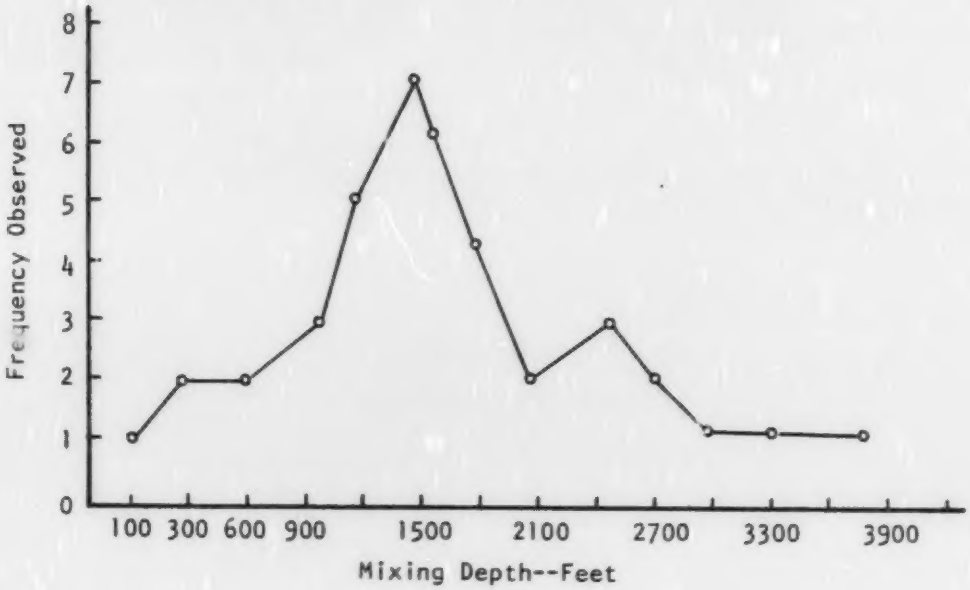
--Source: Gather, 1973

Stability

Frequency	Classification	Prevailing Wind Direction
50.5%	Stable (E,F)	E, ESE
15.1	Transition (B-C)	E
31.8	Neutral (D)	W
2.6	Unstable (A)	W

Mixing Depth (Inversion Height)

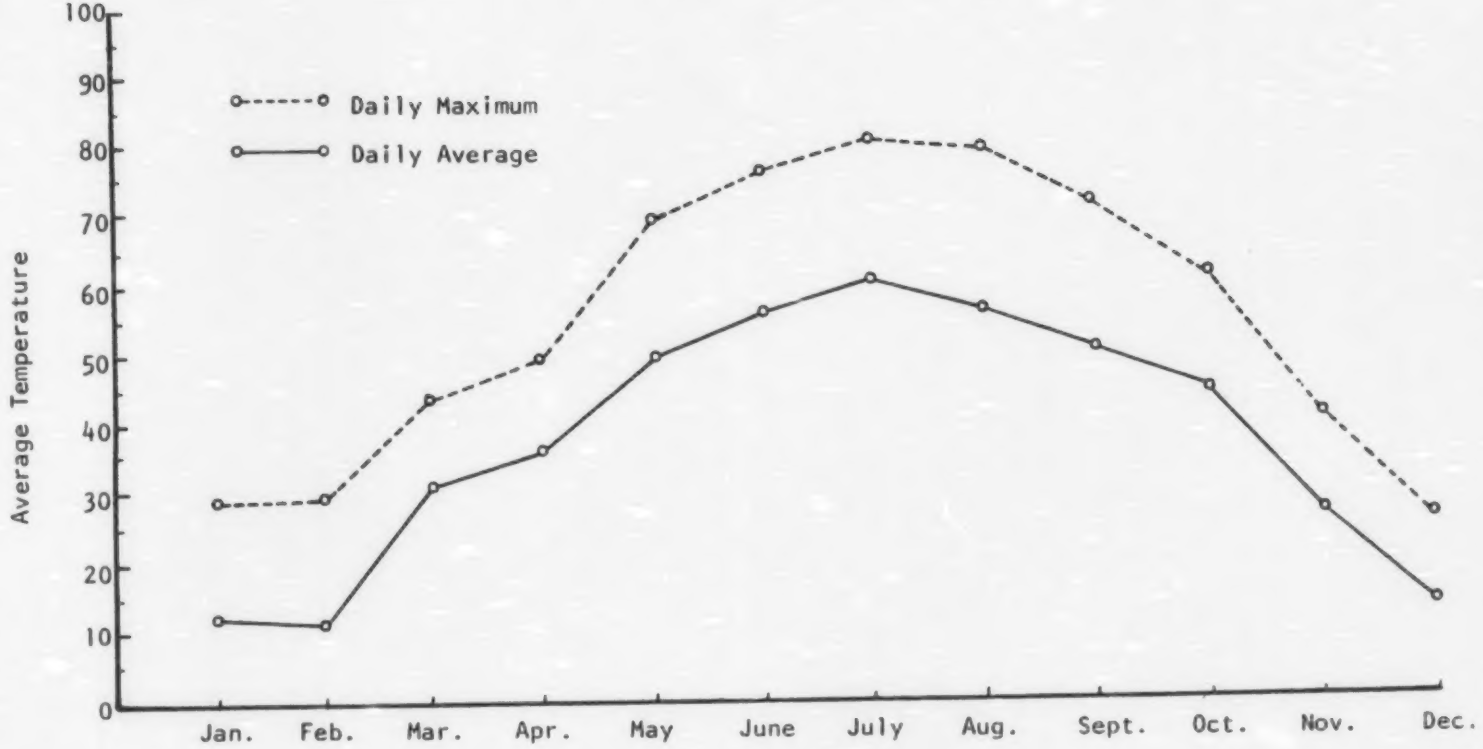
Average	1600 feet
Range	100-3800 feet



Hayden Meteorological Data

Figure 6

Source: Environmental Assessment, Yampa Valley Airport, Isbill Associates and Weiner & Associates, 1974.



Temperature Variations (Monthly Averages)

Figure 7

Severe frost at these higher elevations occurs between the end of August and the first week of June. As a result, little farming occurs above the 9000 foot level.

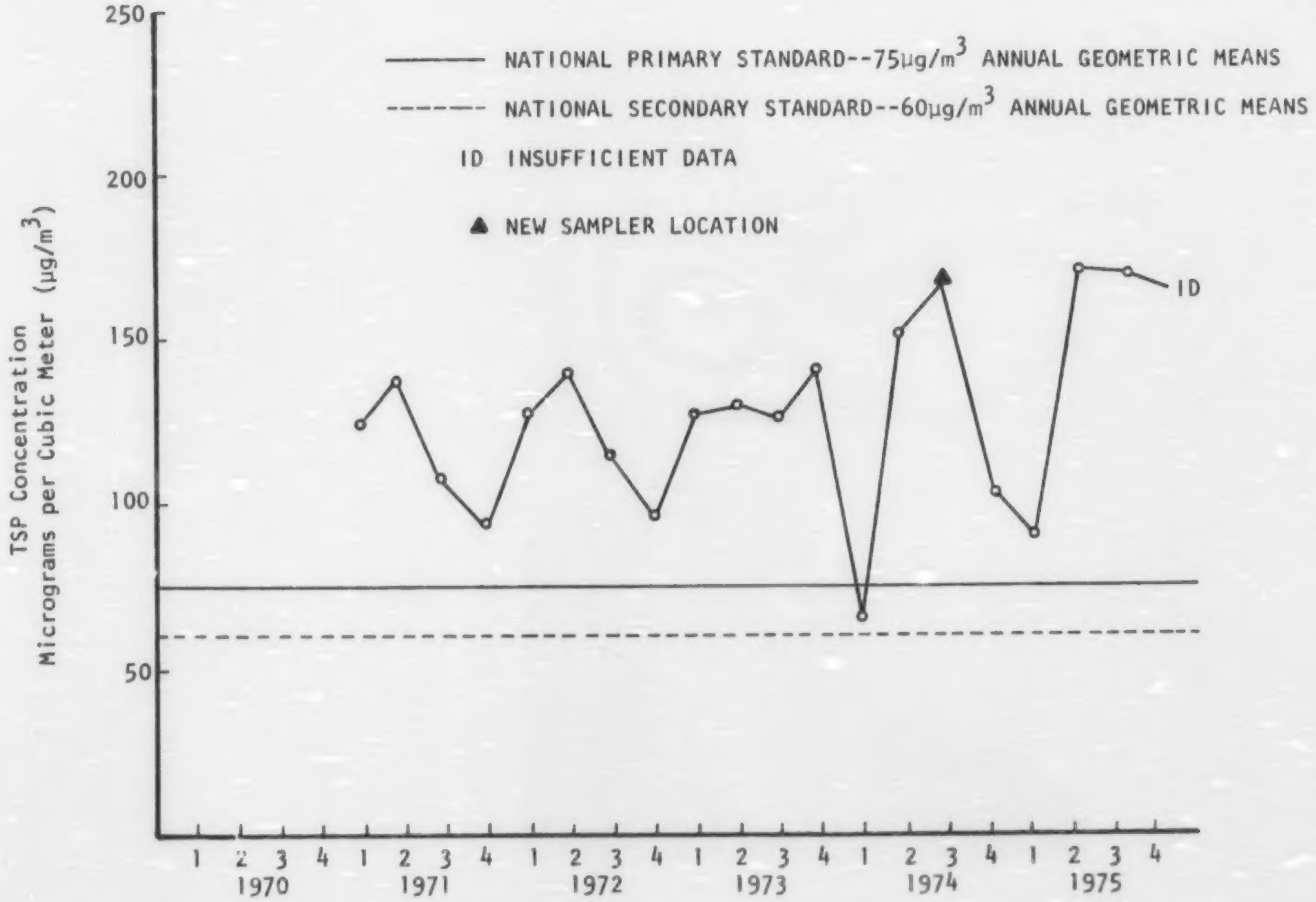
Review of the wind data indicates that during the morning, calm conditions prevail 65.6 percent of the time. Morning winds occur 15 percent from the northwest - southwest quadrants, with the remaining distributed among other quadrants. Afternoon conditions provide 43.2 percent calms and 35 percent westerlies. Windspeeds average 6 mph over the year although periodic high wind days have occurred, requiring the closing of ski lifts.

The significance of climatological statistics is that consideration must be given to growing season length, temperatures, humidity, rainfall, length of day and cloud cover, among other factors in designing a land treatment program. The most important fact remains that the candidate areas are presently irrigated so that problems in using effluent are limited to application rates, coverage areas and associated hydraulic loading. These factors constitute the principal engineering constraints for a land treatment system as discussed in the alternative analysis of this EIS.

Air Quality: In the following discussion the knowledge of ambient air quality in the study area is reviewed as is the applicability of State and Federal programs. The Bureau of Land Management has prepared and circulated a "Draft Environmental Impact Statement for Coal Development in Northwest Colorado--Air Quality Section." Major topics of this draft include agency goals and model studies and is the only study available which considers the Steamboat Springs area.

The Yampa Valley lies within the Yampa Air Quality Control Region, currently priority 3 for the major pollutants of national concern. Such designation is meant to indicate that no Federal Primary or Secondary Air Quality Standards are being violated anywhere in the Region. However, it should be pointed out that this designation was arrived at on the basis of limited aerometric data. High-Volume (Hi-vol) suspended particulate and sulfasion plate data are the only regulatory agency measurements that have been taken in Routt County. Both of these measurements are limited in accuracy with sulfation plates providing only an indication of the presence of airborne sulfur compounds.

Figure 8 displays recorded levels of total suspended particulate (TSP) for the Steamboat Springs station. These measurements indicate almost continuous violation of State and National TSP ambient standards, which contradicts the above priority designation. There is no apparent seasonal trend, nor are there large industrial



Total Suspended Particulate (TSP), Steamboat Springs, Quarterly Geometric Means, 1971-1972

FIGURE 8

sources nearby that would explain these high levels. The concentrations recorded are characterized as among the "dirtiest" in the State by Colorado Health Department personnel. Although State officials express concern, this is considered a lower priority and therefore no agency action has been taken to identify or subsequently abate the source(s).

Fireplace Smoke at Ski Area Village

Pursuant to a court interpretation of Clean Air Act (1970 as amended), EPA and the State are currently preparing "Air Quality Maintenance Plans" for areas thought to be potential future violators of ambient standards. The impetus is to prevent deterioration of air quality in "clean" areas and to preserve maintenance of standards in other areas, where violations occur but compliance is expected. An anomaly exists in the case of Steamboat Springs where one of the highest ambient concentrations persists, while the area is not being considered for Maintenance Planning nor has its TSP priority classification been reconsidered. In the absence of point sources (industry, etc.) the cause of this obvious problem is likely a combination of road and field dust, becoming airborne by spring, and summer wind gusts and traffic. During the fall and winter, fireplaces and road sand are likely responsible. To accurately determine the source(s), TSP sampling in the area must become more sophisticated. In addition to knowing the mass-density (ug/m^3), the particle size and chemical composition must also be determined in order to develop any practical control program. This would be particularly valuable in assessing the air quality influence of the planned U. S. 40 bypass.

Adding even more importance to this need is the State ambient standards, which have been redrafted to address "significant deterioration." This seemingly complex topic is related to Maintenance Planning and attempts to define how much the air quality in pristine areas can be degraded by growth and development. The significance of all the preceding discussion is that agency planning and regulations are becoming more and more complex but until the true nature of the source-effect relationship is known for TSP, little success can be realistically anticipated from these endeavors.

In the absence of measured pollutant concentrations, researchers use mathematical simulation techniques. These techniques, referred to as diffusion models, combine emission estimates with historical meteorological data to predict ambient conditions. The principal air quality studies that have been done in the area include the environmental assessments and impact statements for power plant development near Hayden and Craig;[1] expansion of Yampa Valley Airport (Hayden); and the rough draft EIS for coal development in northwest Colorado, prepared by the BLM and USGS. Both the power plant and airport studies dealt with their project areas and do not apply to this 201 Study Area.

The BLM and USGS effort thus far has produced a 2600-page study of northwestern Colorado. The air quality portion was required to look at all possible emission sources and to determine the coal-related growth impacts on air quality as well. The BLM consultant used a diffusion model for the Steamboat Springs area which is not considered valid The model used (Gaussian multi-point and line sources) is not applicable for mountain valleys due to the effects of the terrain. Even though the validity of the predicted concentrations seems questionable, the following conclusion seems justified:

> "Air quality during the proposed development would be degraded in terms of all presently regulated pollutants: suspended particulates, sulfur dioxide, carbon monoxide, nitrogen oxides, reactive hydrocarbons and total oxidant. Although emissions controls are proposed at the power plants and mines and vehicular emissions are regulated, adverse environmental effects could not be avoided."

This preliminary Statement goes on to conclude that Federal TSP standards will be exceeded in Steamboat Springs as already is the case. It also states, "power plant emission of fine particulates and conversion of sulfur and nitrogen oxides to aerosols would cause a visibility reduction that cannot be mitigated." Elsewhere in the report, BLM states that the visibility range in the region is 90-100 km, while Steamboat Springs has an average visibility limited to 10-20 km.

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[1] Some field monitoring of SO_2 has been done to calibrate the diffusion model used.

As the temporary and permanent population grows, more road sand dust and fireplace smoke will be emitted to the air in the Study Area. When this is considered in conjunction with power plant aerosols, predominant westerly winds, intense winter inversions, reduced visibility in the area, and the continued violation of TSP standards, serious concern must be raised for the study area's air quality.

The TSP sampler is now located on the County Court House along Lincoln Avenue, U.S. 40 through the City. The high levels are obviously influenced by the heavy traffic volumes on Lincoln Avenue which help the excessive street dirt and sand to become airborne. An adequate urban runoff control program would not only benefit the Yampa but also likely improve TSP ambient conditions through routine street cleaning.

Odor

Wastewater treatment facilities affect air quality primarily in the area of ambient odor and its impact on nearby citizens. When treatment works are proposed in new locations, odor potential often stimulates local emotions and public interest surges. The small sewage plants at Steamboat II, Bear Pole Ranch, Sleepy Bear and KOA experience problems characteristic of plants of their size, not the least of which is odor. No odor complaints have been recorded for the Mt. Werner plant which is located well away from nearby residences.

The Steamboat Springs Sewage plant is located immediately adjacent to residences and businesses to the west and north. During the last week of February, the closest residents to this plant were interviewed. The families interviewed have lived in the nearby mobile home park from one to four years. No one contacted objected to the presence of the existing plant or a new plant. In fact, two residents were not even aware of the existing facilities location. Occasionally, 86 percent of the respondents detected an odor which they attributed to the plant; however, no one felt it was objectionable enough to merit a complaint.

Because this system is similar to Mt. Werner, it is dependent on blowers to keep the system aerobic. One resident stated that a power outage had created an objectionable odor. That same person's main concern was over the visibility of a new plant if located at the existing site. It is feared that a new building would block a direct view of Mt. Werner, which is the principal aesthetic amenity to these residents. Thus, building height and visibility are principal concerns of nearby residents, followed by a general desire to be assured that a new plant, handling more and more flow, will be no more objectionable than the present facility.

History and Archaeology

In 1875, James Crawford was so anxious to secure the claim he had staked in the lush Yampa Valley that he started out before the snow melted and skied to the site of Steamboat Springs. By the end of that summer his family was one of five that had cabins in the area and Crawford had become the father of the town.

The pioneers were preceded by trappers and prospectors. The trappers thought the springs sounded like a paddle wheel steamboat, so the story goes, and are responsible for the present name. The Ute Indians called the area Medicine Springs and had for several centuries used it as a pleasant, cool summer hunting grounds.

After a small uprising in 1879 the Utes in northwestern Colorado were removed south to the Ute Reservations and white families felt safer about coming to Steamboat to settle. Mail service had been instituted in 1878; in 1883 a school and a sawmill, which made planked buildings possible, were founded.

In 1884, Crawford and some other investors formed a company to promote the town and sell lots. Later in Steamboat's history other entrepreneurs turned to real estate, particularly after 1890 as small family ranches became the mode.

The town grew steadily until by 1900, the year it incorporated, it had a population of around 900. The collapse of the gold mining boom at Hahn's Peak, 20 miles to the north, created, as elsewhere in Colorado, a lot of new farmers and ranchers. And the extension of the Denver and Rio Grande railroad to Wolcott, 80 miles to the south and a day and a half by stagecoach, brought the town within ordinary reach of previously extravagant amenities.

By 1902 Steamboat Springs had a lively commercial life with dozens of stores, a public library, electricity and telephone service. A water and sewage system did not come until 1904.

The long-awaited coming of the railroad to Steamboat itself happened in 1908. It was mainly a boon to the cattle industry and for a short time more cattle were shipped from Steamboat Springs than any other single point in the country.

People expected the railroad to be the missing link in a number of other industries: mining of coal, oil and other minerals, timber and tourists. But mining never developed as extensively as predicted, logs either raced too fast down the Yampa or jammed at low water, and despite the construction of a 100-room hotel and huge swimming pools, the town never developed into a spa.

Strawberries did, however, boom for several years around that time. Because a single farmer converted six acres into a profit of $3000 one year, the entire valley of Strawberry Park was planted with strawberries. The berries, grown at high altitudes, came to market later than other commercial crops and some went as far as Chicago. But three years of early frosts ruined land speculators and farmers, and the idea died.

Meanwhile, an everyday winter activity had taken a new, festive turn which was to mature a half century later into another boom. Homemade skis, furbottomed to prevent backsliding, were a necessity in early Steamboat for people like mail carriers, ranchers and pallbearers. Then, in 1914, a Norwegian named Howelson set up a hill on his property as a ski jump and convinced his neighbors that what they had was fun. The first ski carnival was held later that year and consisted of a jumping event and a cross country race.

Steamboat Springs continued down through the years as a mildly prosperous town of steady balues and relatively little change. For nearly 50 years the town's population hovered between 1,000 to 2,000. Its location on Highway 40 near Rabbit Ears Pass brought it some tourism, and the Olympic skills of Buddy Werner some fame, but for the most part it remained isolated in its corner of the state. Then came the development of Mt. Werner and all was to change.

Archaeology

According to the state archaeologists there are two archaeological sites within the study area. Both are located southwest of Mt. Werner and south of the Mt. Werner sewage lagoon in the neighborhood of the Yampa River and U.S. 40. Neither archaeological site is close to any of the areas under consideration as a site for sewer facilities. However, EPA realizes that existing archaeological information is insufficient and is in the process of updating it with a field study of proposed project sites. Copies of this report will be available upon request by September 15, 1977.

Population

Steamboat Springs has undergone incredible growth and change within a short time. Once a quiet, rural town where ranching, lumbering and some mining and tourism were the chief endeavors, it is now the home of one of the nation's best known ski resorts.

The resulting influx of people has brought enormous problems. Living costs have skyrocketed; roads are overcrowded; other public utilities are strained to the limit; and agricultural traditions are threatened. These issues are discussed in succeeding chapters on land use and socioeconomics, but in this section we shall deal with the root problem of population growth.

Like that of many resort communities, the population of Steamboat Springs is difficult to tally. A steady stream of tourists, skiers and part-time residents complicates any population count. There are of course full-time residents who live and work in the area year-round, but even a calculation of their numbers is confused by the rapid growth which occurred between 1970 and 1973. The U.S. Census figures, taken in 1970, were outdated not long after their release. Other traditional government sources are of little or no use. The Northwest (Colorado) Council of Governments lacks population data of its own for either Routt County or Steamboat Springs. The State Planning Office which has estimates of present and future population for the county does not separate figures for Steamboat Springs, nor does the federal Office of Business and Economic Research.

Fortunately, several studies containing population data were completed by private consultants at the request of local government; and one federal agency, the Bureau of Land Management, developed population data as part of an environmental impact statement for coal leases. However, each of these studies is based on work completed by Charles Gathers and Associates as part of the Comprehensive Plan commissioned by the County. It is for this reason that our analysis will focus on Gathers' estimates for the Steamboat Springs area, and will discuss other surveys only as they relate to these estimates.

The Gathers Report: In order to obtain estimates of existing population, Gathers analyzed the two main economic bases of the Steamboat population: the sector of the economy which serves the agricultural community and that related to the skiing industry.[1] An estimate of 1973 agriculture-related employment and population was derived from interviews, housing surveys, and an analysis of Census data, which applies somewhat to ranching since this was not the sector in which rapid growth occurred. An appraisal of 1973 ski (or tourism) related population was also obtained from interviews and housing surveys, along with assumptions about labor participation rates and population density in skier-oriented economies.

Together, Gathers estimated the 1973 population of the Steamboat Springs area to be as follows:

Permanent	4,917
Temporary (Lodging unit capacity)	5,406
Total Peak Day Population	10,323

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[1] Mining, which could affect population if new coal leases are granted, is discussed later in this chapter.

From these figures Gathers derived population projections through 1995. The following methodology and assumptions were used:

- All increases in tourist-oriented population would derive from an increase in daily lift capacity (DLC) at Mt. Werner. Gathers assumes that DLC would increase from 6,000 in 1973 to 12,000 by 1979.
- After DLC increased, there would be a three-year lag time in lodging capacity expansion to meet the needs of the increased numbers of temporary residents drawn to Steamboat as a result of increased skiing facilities.
- The existing relationship between lodging capacity and tourist-related employment was projected to remain the same, as was the labor participation rate (ratio between employed persons and total population).
- Agriculture-related population would remain relatively static, but would tend to decrease as recreation-oriented population increases. Labor participation rates and population density would remain static within this sector of the economy.
- A 10 percent increment was added to the figures for each economic sector as a "safety factor." This increment was intended to compensate for any other inducements to growth which could not be predicted at the time of the study, the most likely of which is increased mining activity.

From the above, Gathers projected the 1995 population of the Steamboat Springs area to be 23,600 on peak days, broken down into 9,900 permanent residents and 13,700 transients.

Analysis of Method and Assumptions: The method used by Gathers is sound. However, the assumptions were made when Steamboat was at the tail end of a tremendous economic boom, and are overly optimistic.

Using the wisdom of hindsight, we believe that the Gathers estimates of present population are too high. Interviews with people in the Steamboat community indicate a sharp cutback in the area's growth over the last two years. Construction has fallen off due to overbuilding which has left a surplus of tourist-oriented housing. In addition, a lack of jobs (other than seasonal), a shortage of affordable resident housing, and a high cost of living persist, all of which have deterred new additions to the permanent population. For this reason we have concluded that the Gathers estimate of 1973 permanent population more appropriately applies to 1975.

We also feel that Gathers overestimated both the future rate of growth and the ultimate population of the Steamboat area by 1995. We have therefore developed alternative projections based on Gathers' model, but with different assumptions relating to DLC, government approval to expand DLC, lag time between DLC expansion and housing construction, the national economy, the definition of peak population, and the influence of coal development.

Daily Lift Capacity (DLC): The capability of a ski area to transport skiers up the mountain and distribute them among the slopes is a critical parameter in Gathers' methodology. It is also a fundamental factor in ski area planning and management. For this reason many equations have been derived by the Forest Service and others to consider the physical characteristics of the mountain as well as the facilities placement. These equations and specific interviews suggest present DLC at the Steamboat Ski Area ranging from 6,000 to 7,850 skiers. The best estimate in our opinion and that of area personnel is 6,600 skiers for the existing facilities (Barrows, 1976).

We believe that the DLC will expand to 8,000 by 1984, to 10,000 by 1991 and to 11,000 (maximum)by 1995, compared with Gathers projection that it will be 12,000 by 1979. Representatives of LTV have indicated that their most optimistic plans would include a minimal expansion of DLC by 5,000 by 1982 or 1983 at a new base site. One point of uncertainty is that ITV might sell its interest in the ski area. Should this occur, it is not possible to predict its exact effect on plans for possible ski area expansion. For this reason we have taken the physical potential of surrounding terrain, management statements, local and regional Forest Service projections and County planning staff opinions into account in arriving at a maximum of 11,000 skiers.

Government Approval: Any expansion of the dimensions discussed above, whether by LTV or new ownership, would require the approval of several agencies, including the U.S. Forest Service, the Routt County Regional Planning Commission, and the Routt County Board of Commissioners. Expansion could ultimately be accomplished; however, there would be several obstacles and time delays. Representatives of the Forest Service have recently initiated work on an area-wide Environmental Impact Statement for their Program Unit Plan for the Routt National Forest. It will take approximately five years to complete this study, and Forest Service personnel have stated that until this process is completed, no new ski area expansion will be approved. It is also possible that a separate EIS will be required for individual ski area expansions, depending on the nature of the proposed development. It is for these reasons that we have used the later lift capacity expansion dates.

More importantly, the County Commissioners are faced with the substantial burden of meeting the needs of an expanding population. They advocate that growth rates be slowed to allow the County and the City to "catch up" with the needs of their constituents. They are certain to take a hard look at proposed ski development expansion in order that they might be better able to successfully accomodate its impact on the County. While it is likely that such development will ultimately be approved, it is our opinion that the County Commission's scrutiny of any proposal will tend to prolong the time needed to obtain final approval for lift expansions.

Housing Development: We have also assumed that there will be a lag time of five years between expansion of DLC and construction of increased lodging. This assumption was made for two reasons. First, there has already been substantial overbuilding of temporary lodging. Even at peak periods (the 30 best days of the ski season), temporary lodging is only 60% of capacity. We feel that until this ratio approaches 75% or more, there will not be extensive new tourist housing construction. Second, there has been a considerable slowdown in the construction industry throughout the country. Money markets are tighter and financing is more difficult. Should there be extensive energy development in or near Routt County, housing construction will turn towards the needs of energy workers and will stretch the lag time for ski-oriented construction beyond the three years projected by Gathers.

The National Economy: There are some industries which seem almost immune to fluctuations in the national economy. Tourism, particularly skiing, has recently seemed to be a good example of just such a phenomenon. In the past few years, as the nation has been experiencing a relatively serious recession, overall numbers of visitors to ski areas have continued to increase. Although skiing has increased in the midst of a recession, it would be oversimplistic to assume that ski areas are unaffected by a downturn in the economy.

While tourism is apparently unaffected, construction of ski area facilities and second home development have become particularly susceptible to national economic trends. In a time when national money markets are tight, speculators and developers are much more cautious about such capital intensive investments. While families may continue to indulge in an annual ski vacation, they will be much more likely to rent a condominium than to consider the purchase of a permanent second home.

Even with eventual national economic recovery, the ramifications of overbuilding will continue to be a concern. The almost tragic overdevelopment which now threatens neighboring Summit County (The Denver Post, 2/15/76, p. 1E) and the now defunct Stagecoach and Steamboat Lake developments in Routt County, graphically present a warning which will undoubtedly be heeded by developers in the future. Money markets will likely assume a similar conservative posture toward these speculative ventures. The effect will probably be a return to classical economic attitudes where supply will follow well documented demand as opposed to speculation that supply itself stimulates demand, hence growth.

All of these factors contribute to the anticipation of a slower rate of ski area development and housing construction than has been projected by Gathers as shown in Figure 9.

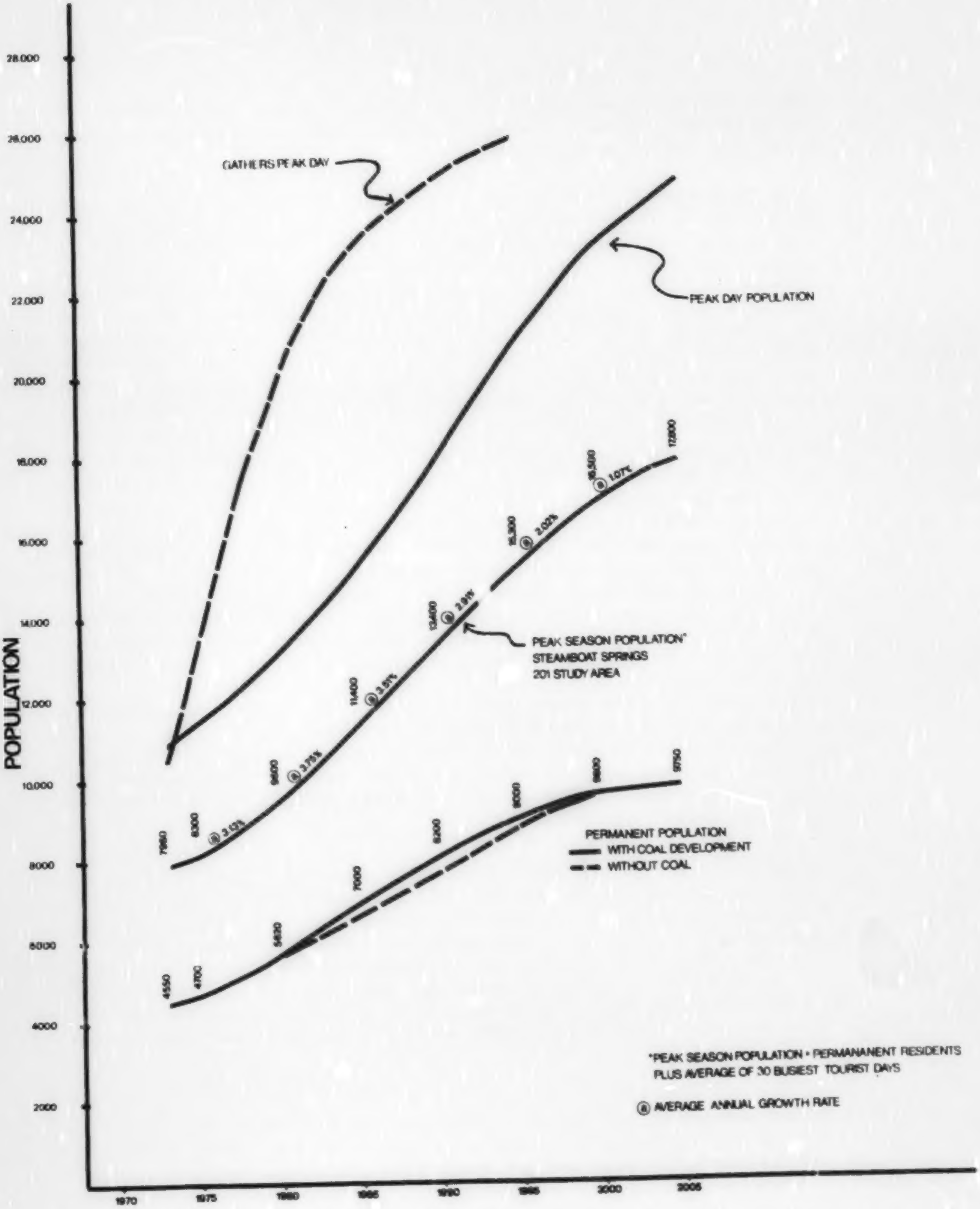
Peak Population: We have made one further modification of the Gathers data which we feel more clearly represents the actual situation in Steamboat. "Peak-season population" refers to the total permanent population plus an average of the 30 busiest tourist days of the ski season (as opposed to December 28, when every pillow in the study area probably has a head on it). This 30-day average presently corresponds to 60 percent of the total tourist accomodations, and as such, is a more representative and realistic accounting of the seasonal population. A peak day projection is also shown which correlates with sewage flow data and is thus being used by Wright-McLaughlin for design purposes.

The Influence of Coal Development: It is fairly evident now that there will be some increase in local Steamboat Springs population resulting from the development of extensive coal deposits in Routt and Moffat Counties. This fact was less evident when Gathers was doing the research for the Comprehensive Study in 1973. However, this 10 percent "safety figure" did take into account the expected, but then undefined, stimuli to growth in the area. These stimuli, independent of tourism and ranching activities, could include construction of Bureau of Reclamation dams and the expansion of the Hayden power plant, or they could include the increase in population resulting from increased coal development.

Our second permanent population curve includes growth anticipated as a result of coal development in the Routt-Moffat County area. This added population was derived by subtracting Gathers' 10 percent "safety figure," then adding population estimates for the Steamboat area which were developed by the Bureau of Land Management in its draft EIS for coal development in the area.

While we feel that the total population resulting from coal development is accurately calculated by BLM, again we feel the schedule of development is over-optimistic. We have therefore calculated into the early development BLM figures a five-year lag time. This takes into acount the time necessary to litigate (environmentally-related) lawsuits, which may be filed as a result of potential coal leasing. As the population curves indicate, with coal development, growth in permanent population will be accelerated between 1980 and 1990, but will decrease substantially after 1990.

Staff members of BLM stated in the fall of 1975 that there would be an almost direct tradeoff between coal and recreation development. Although BLM is currently less certain about this statement, we feel that should



*PEAK SEASON POPULATION = PERMANANENT RESIDENTS PLUS AVERAGE OF 30 BUSIEST TOURIST DAYS

Ⓐ AVERAGE ANNUAL GROWTH RATE

STEAMBOAT SPRINGS REGIONAL SERVICE AUTHORITY
201 STUDY AREA POPULATION PROJECTION

Figure 9

U.S. GOVERNMENT PRINTING OFFICE: 1976—676-133

there be an increase in permanent residents in Steamboat as a result of coal development, there will be a corresponding decrease in the number of temporary residents. As a result, the peak population will remain virtually the same, with or without coal development. This is because factors which contribute to population growth are seldom additive. An increase in energy-related population will be reflected in many sectors of the economy. The housing market will shift from the construction of condominiums at the base of the ski area to mobile or modular home development elsewhere in the county; retail services will provide more hardware, less ski equipment; restaurants will attempt to project more of a "family" image than they would otherwise; the planned nightclub would be replaced by a bowling alley. As Steamboat shifted to accommodate permanent energy-related population, it would expend less energy attracting the temporary, ski-oriented population and would, as a result, be less attractive to that segment of the population.

The overall effect would be to decrease the number of temporary residents in the Steamboat area--a number closely related to the number of permanent energy-related residents. It is for this reason that temporary and permanent population show fluctuations as a result of energy development, while overall peak population does not.

Land Use

Most land in Routt County and greater Steamboat Springs is agricultural. Figures from Gathers and Associates show that 73.2 percent of the county's square mileage is used for agriculture: 62.8 percent is range land, 6.7 percent is non-irrigated farmland, and 3.8 percent is irrigated farmland. Within the greater Steamboat Springs area, defined by Gathers as a border about five miles beyond the city, 29.2 percent of the property is agricultural, the largest percentage among all categories of use (Study Map 2).

Agriculture in Routt County and greater Steamboat chiefly involves the production of livestock, wheat, and other related activities. County farm receipts in 1975 came to $22,800,000, according to a report in The Steamboat Pilot, compared with $21,362,000 for the previous year. This was a six percent rise, as against a five percent increase for the state as a whole.

After agriculture, land use between the county and Steamboat Springs differs somewhat. For the county, commercial woodland occupies 20.9 percent of the square mileage, recreation areas 3.2 percent and subdivided land (outside of urban areas), highways, railways, airports, strip mines, water bodies and urban areas less than one percent each (Gathers and Associates, 1973).

In greater Steamboat Springs, public and semipublic lands, primarily the ski slopes on Mt. Werner, comprise 29.1 percent of the total acreage; vacant land, 23.3 percent; transportation, 8.6 percent; residences, 7.7 percent; and commerce and industry, 2.0 percent. The big percentages in Steamboat for skiing, transportation and homes reflect the town's dependence on recreation, which now dominates the local economy.

This was not always the case as mining, lumbering and ranching were the region's traditional endeavors. Some tourism existed, but due to the rugged terrain and the town's distance from any densely-populated area this was not a major source of income. Recreation, especially skiing, was a popular pastime, but did not provide much employment. A small ski run and jump on Howelson Hill, and a weekend area, built and owned by local residents on Mt. Werner, were all Steamboat had to offer until 1969. In that year, LTV Recreation Development Inc. purchased the Mt. Werner area and set off the expansion that would dramatically alter the locale's environment, economy and land use.

Other land developers followed LTV. Steamboat Lake, Stagecoach, Steamboat II, Tree Haus and Riverside were set up within a few years, shifting the economic base to real estate and recreational development. In each of the years between 1970 and 1973 land values skyrocketed as 593 dwelling units were constructed, 61 percent of them in the Steamboat Springs area.

City of Steamboat Springs

Ski Area Village

The selection of Steamboat Springs as a site for the 1976 Olympics inflamed the situation. As one report noted: "The overall mood of the county is one of great boom and anticipation" (HWH Associates, 1972).

The downturn in the national economy, the rejection of the Olympics by Colorado voters, and the bankruptcies at Steamboat Lake and Stagecoach put an end to the boom. For the last couple of years land sales have been in the doldrums. Still, as noted previously, no one doubts that significant growth will occur over the next 30 years, though at a decidedly slower pace. There will probably never be another period of growth like the years 1970-73, but the pressure to develop, to turn ranchland into commercial real estate will continue. An article in the November 13, 1975 Steamboat Pilot ("The Prospector," p. 6) noted that "recreational and land sales throughout the nation are beginning to pick up." It is only a matter of time before Colorado sales follow the national trend, despite the memories of Steamboat Lake and Stagecoach. LTV's advertising, the national attention gained by association with the Olympics, combined with the area's natural beauty, climate and other amenities, will keep Steamboat Springs' reputation as an attractive place in which to vacation or live.

A typical result of all the foregoing activity has been the institution of zoning regulations, for until 1972 neither Routt County nor Steamboat Springs had zoning. But urban development created an awareness that what an individual does with his property can affect neighbors and people who live miles away. The citizens of Routt County have been especially affected by financial setbacks at Steamboat Lake and Stagecoach. Certain other projects, especially road improvements, are something the area needs urgently but have been cut back due to the loss of expected revenues. Dr. J.A. Utterback, County Commission Chairman, notes, in the November 13, 1975 Steamboat Pilot (p. 1) that: "If the tax dollars we project don't come in, then we have to curtail a certain amount of the services we anticipated providing."

Because of growth-related problems, planning mechanisms in the county and Steamboat Springs were developed quickly. With help from Charles Gathers and Associates, the area soon had:

- established county zoning regulations;
- set up a management system to administer county planning activities;
- revised county subdivision regulations;
- established or revised zoning and subdivision regulations for Steamboat Springs;
- initiated drafting of a comprehensive plan for the county and its communities;

- planning commissions established for incorporated towns including Steamboat Springs;

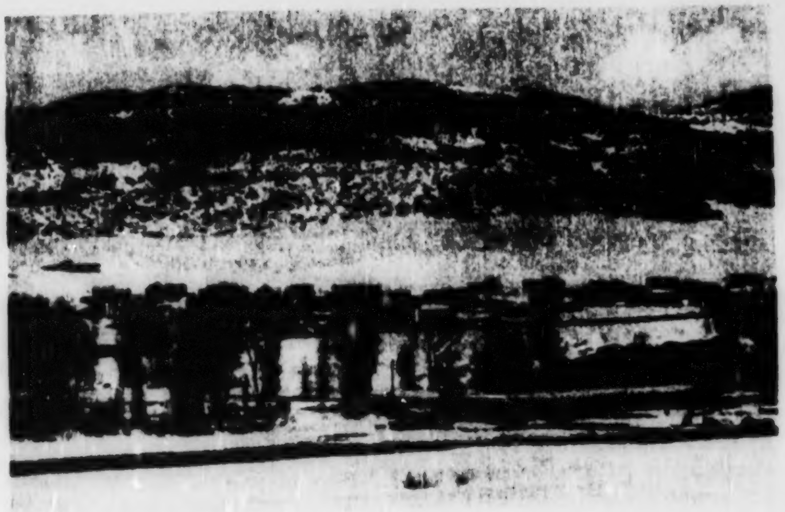
Developers in Routt County no longer can act without lengthy consultation from public officials and the citizen-at-large. For example, county subdivision regulations require the completion of four steps before final approval can be given. First, an information presentation must be made to the Routt County Regional Planning Commission. This is followed by the Sketch Plan, consisting of basic design, maps of the area, reports concerning water and sewer systems, and additional information deemed necessary by the commission. If Sketch Plan approval is received, data for the Preliminary Plan is then required. This is the most costly and time consuming step, for it is at this point that specific design standards must be met. Detailed information is required with regard to geology and vegetation, slope analysis, roads and streets and protective covenants. It is also at this stage that state agencies are notified. If all goes well, the Final Plat, the last step in the procedure, should be the simplest of all. The Final Plat is the permanent and accurate record of the exact size, shape and location of lots, blocks, streets, easements and other parcels of land within the subdivision. During all stages, except the first, informal presentation, adjacent landowners are notified that the proposed development will be considered by the planning commission.

The existence of this public apparatus is by itself a discouragement to some growth. The death of the Olympics also relieved much of the pressure to develop and the boom years left the area overbuilt and overzoned. Already platted lands could easily hold projected population levels. Land use trends in the foreseeable future should, therefore, follow the pattern that has been laid out by planners. The county should be able to maintain its unofficial policy of contiguous development by allowing new construction only on property adjoining previously developed land. This, hopefully, will avoid some of the problems associated with satellite developments such as Steamboat Lake and Stagecoach, which were miles from the Steamboat Springs urban area, and will help in preserving agricultural land.

New populations will probably fill in and connect the area between Mt. Werner and the old town. This is the logical growth pattern and is in accordance with planning projections (Study Map 2). Whatever commercial and industrial development occurs should be in West Steamboat and southeast of town along Highway 40. This development is the logical pattern and in conformity with the land use plan.

However, some words of caution are in order. A number of questions remain about areas that have already been developed, but are a distance away from other developed zones. These areas include Steamboat II, Elk River and Deer Mountain estates. Most of the property between these

City Lagoons Border Trainer Court



Steamboat II Development

areas and the Steamboat Springs/Mt. Werner core is open land, and is zoned to remain that way. While there is no pressure in the immediate future to change that zoning, and while soil and related considerations act somewhat as a deterrent, the natural tendency over the long run may be to connect the clusters. The question of whether Elk River and Deer Mountain should be served by interceptor lines to the new sewage facilities is directly related to this issue.

Much of what happens will depend on the political and economic climates, neither of which can be predicted with certainty. The county Comprehensive Plan has not yet been formally adopted and even then is subject to changes. In addition, the unofficial contiguous development policy is the result of State Health Department policy which in effect prevents new point source discharges into the Yampa River because all wasteload allocations are currently filled. As a result, new developments must hook into existing sewage facilities, which makes contiguous development a necessity as well as a sound policy.

Socioeconomics

In Steamboat Springs, when you see someone wearing a cowboy hat, there is a reasonable chance he is a cowboy. The existence of ranching gives the town an authentic western atmosphere, the upkeep of which is very important. It is the area's most unique quality, the characteristic that separates it from the jet-set atmosphere of other resorts.

The local citizenry is aware of this. A significant amount of talk is about how to maintain the locale's traditions while reaping the benefits of the ski boom. In that sense, Steamboat Springs is not unique. Other resort towns have faced the same problem. The difference is that Steamboat Springs is still in a position to succeed where others have already failed.

Agriculture remains an important part of the local economy. According to 1974 figures from the Colorado Division of Commerce and Development, 13.8 percent of the local labor force was employed in agriculture, placing it third among eleven categories listed. Only "retail trade" with 19.7 percent and "services and miscellaneous" with 18.5 percent were ahead of it.

Besides ranchers, the community is comprised of the following groups:

- Land developers, who have seen a boom economy go bust. The area is now overbuilt with condominiums and development has slowed considerably. Much of the downturn was caused by events well beyond the control of individuals. The national economic conditions did not help; and few could have predicted that Colorado's voters would reject the Olympics, a circumstance that caused special pain since the area was considered a site for cross-country and ski-jumping events.

- The professional/mercantile establishment, including innkeepers, restaurateurs, lawyers, retailers and providers of various other services. Despite the crimp in the condominium market, the tourists and skiers continue to come, allowing this group to thrive and prosper. Skier days at Mt. Werner increased from 244,619 in 1972-73 to 437,447 in 1974-75. LTV, the corporation which owns the ski concession, anticipates a total in the neighborhood of 500,000 in 1975-76. Gross retail sales for Steamboat Springs rose from $9,978,060 in 1965 to $22,651,097 by 1974. Well organized commercial groups like the Chamber-Resort Association and the Restaurant Association thrive in this city and exert an important influence on its government.

- Transients, in their 20s and 30s, who come for the skiing and other amenities. Often staying only a winter or two, they account for much of the workforce at the ski area and in downtown sections. They are generally willing to accept low wages in return for a lifestyle that leaves plenty of time for recreation. Many live communally, unable to afford the area's expensive housing. However, their lifestyle is a form of voluntary poverty since most possess skills to move elsewhere and find well-paid jobs. Interviews with local residents indicate that fewer transients are arriving now than two or three years ago.

- The permanent workforce, which includes many former transients who liked the area and stayed. Other members of this group are government employees, teachers and some miners and construction workers. Competing for jobs with transients, while struggling to raise a family against inflated living costs, many fail to make it and leave after a few years. In fact, a majority of Steamboat Springs' residents (58 percent) have lived there for three years or less, according to Colorado Division of Highways study.

- Tourists, on whom many of the townspeople depend for their livelihood. Steamboat Springs was recently rated very high in courtesy and friendliness by a 3M National Advertising travel study, and there is little doubt that the area offers a special charm, particularly to city visitors. While gearing up the economy, the influx of tourists, especially ski vacationers, is also the reason for the high cost of land and housing, and for the pressure to convert agricultural property to commercial or residential use. Christmas is the busiest time of the ski season often supporting 10,000 to 12,000 people. This surge is partly due to the many students returning home with friends to spend the holidays. Local residents have many guests during this time, and many locals move in with friends and rent their own homes to tourists.

Senior Citizens: Persons over 65 years old comprise an above-average part of the population, 9.7 percent in Routt County compared to 8.5 percent for the rest of the state. Among the programs for retired people in Steamboat Springs are:

- Meals on Wheels, which expanded this past year, delivering an average of six meals per day compared to only one or two in previous years;
- The Retired Runabouts, a group of 25 to 30 regular members who themselves pay for most of their trips and expenses, though some funding comes through Routt County Senior Services;
- The Kiwanis Club bus, which once a week drives senior citizens to the main business district. Operated for two years at an annual expense to the Club of $1,200, the Kiwanians recently defrayed some of the costs with help from the rest of the community.

Most funding for projects comes from the Routt County Senior Services, including programs for residents of Hayden and South Routt County as well as Steamboat Springs. Senior Services, with an operating budget of $9,500 per year, recently held a fund raising drive to make up an anticipated $1,000 deficit. The fund raising was an alternative to increasing the cost of home meals above $1 or charging for activities that are now free. Senior Services also has a Council on Aging to review present services for the elderly and needs that must be met.

Paramount among those needs are transportation and housing. Transportation is a special problem in a cold climate where snow and slippery sidewalks can make even a short shopping trip dangerous. Consequently, Senior Services intend to increase bus service above what is presently available. Housing is an even more serious problem and it represents a substantial financial burden to many. If they own their own homes, they face rising property taxes. If not, rentals at reasonable rates are hard to find. Only one low-rent apartment building called Mountain View Manor is available to senior citizens in Steamboat Springs. It was financed through local donations and the Farmers' Home Administration. However, all units are filled in this building and some people have been on the Manor's waiting list for close to a year. A privately run nursing home, called Alpine Meadows, has also been available for about three years. It currently has around 40 patients, with about 75 percent receiving welfare aid.

Housing: Housing is not only a major problem for the elderly, but for everyone else as well. The ski boom on Mt. Werner and the resulting push for development have sent land prices skyrocketing. Interviews with residents indicate that $25,000 is the absolute rock-bottom price for a home, while something for under $30,000 is nearly impossible to find. These costs create a serious obstacle to people who wish to remain in an area, where local median income is less than the state average. Some long-term residents frankly admitted that should they ever be forced out of their present homes, they could not afford new housing in Steamboat Springs.

As a result, many of the young service workers live communally, sometimes packing more people into a house than zoning allows.[1] Others, including professional workers, have turned to the several available trailer parks as the only reasonable alternative.

Unfortunately, mobile homes, according to interviewees, are a dirty word in Steamboat Springs. Aesthetically, they are not very pleasing, and they probably do not provide a solution for families with children that would like to settle permanently. As an interim solution, however, some residents conceded they are an answer.

A developing trend to convert tourist to permanent housing will be helpful. The housing shortage in Steamboat Springs is for residents; the condominium market, on the other hand is overbuilt. This latter dwelling has questionable suitability for full-time occupancy and the cost may not be reasonable, either. In sum, because of the economic pressure of residents, transients and tourists seeking housing, it is doubtful that there will ever be low-cost housing in Steamboat Springs if left to the workings of the marketplace. Only private donations or government assistance appear able to alleviate the problem as they did in the case of Mountain View Manor.

Not only is housing expensive, but much of it is in need of repair. In a 1974 survey prepared by the Routt County Regional Planning Commission, over one-fourth of the respondents said their homes needed repair.

Employment: To a certain extent, the housing shortage is a result of the job shortage, or more accurately, the lack of well-paid, career-oriented work. According to 1974 data from the Colorado State Division of Commerce and Development, a plurality of the area's labor force (38 percent) is employed in retail trade or service related jobs that pay less than $100 per week. The part-time nature of many service jobs helps to account for the low salary level. Still, it is a sellers's market since the influx of educated, youthful transients provides a cheap, reliable labor pool for employers. This can make it difficult for those who wish to establish roots in Steamboat Springs but must compete for jobs with a continual flow of temporaries. The need for creating more jobs, particularly by attracting light industry, was mentioned by several interviewees.

After retail trade and services, the largest employment sectors in the area's economy are agriculture with 13.8 percent, contract construction with 8.9 percent, and transportation and public utilities with 8.7

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[1] In such cases, the city council's policy has been to take action only when a written complaint is received.

percent. Other employment categories include education (8.6 percent), mining (6.7 percent), government (4.2 percent), manufacturing (3.6 percent), finance/insurance/real estate (2.8 percent) and wholesale trade (1.0 percent). According to the State Division of Commerce and Development, the best wages were for those in mining ($218 per week on the average), federal government ($204 per week), contract construction ($180) and transportation and public utilities ($163).

Poverty, Public Services and Facilities: Poverty problems exist in the study area but like many ski resorts, those with low incomes are being driven out. Since counties cannot impose a residence requirement for welfare payments people are free to move in and out of the area and still qualify. In 1970, U.S. Census data indicated that 12.9 percent of families in Routt County were below the poverty level, compared to Colorado's 9.1 percent. But with the boom years, incomes have risen, and an article in The Steamboat Pilot (The Prospector, October 30, 1975, p. 8), noted that "most Routt County residents are earning more than they did in other years. . . ." However, applications for food stamps have increased each winter, with the majority of new applicants coming from young people in town for the ski season.

Public services and facilities appear to be satisfactory, though, as in many fast-growing areas, there is difficulty keeping pace with population increases. A capital improvements program and a million-dollar hospital expansion are underway.

The schools in the area were evaluated in a 1974 report by the University of Denver Bureau of Educational Research. It pointed out that: "Because of the recent additions to all three schools within the district, no immediate building construction appears necessary." The report did go on to note that: "This financially optimistic situation should not preclude the necessity for long-range planning and improvement of existing facilities."

Transportation

As is the case in many rural towns, transportation issues and concerns center on the major through highway, for Steamboat Springs, U.S. Highway 40. In town, the highway is Lincoln Avenue, Steamboat's main street. The transformation of the town, within the past few years, into a summer/winter destination resort area has greatly increased traffic and parking volumes. The Colorado Highway Department estimated average 1973 daily traffic on U.S. 40 at 5,000 and projected 15,000 in 20 years. In winter, especially, traffic along the highway between the town and the Mt. Werner ski area is congested. Also, traffic on the road includes a disproportionate number of heavy trucks.

The Highway Department is planning a major upgrading of U.S. 40, beginning five miles west of Steamboat Springs and progressing ten miles in an easterly direction to a point just beyond the juncture of U.S. 40

with State Highway 131. The improvements will include widening the highway to four lanes between Steamboat and Mt. Werner and constructing a central business district bypass via Yampa Avenue.

This construction can create sedimentation problems for the stream if not closely supervised. Once the construction is completed, there must be adequate facilities to handle urban runoff from the road to the stream.

The highway improvement is expected to make for safer, faster and more efficient traffic flow. Despite the inconvenience associated with construction, the road improvements appear to be favored by the town. The Highway Department surveyed over 1,100 citizens in 1972 and reported a concern over traffic problems and approval of U.S. 40 improvements in terms of safety and convenience. From another vantage point, a 3M National Advertising study (reported in The Steamboat Pilot, October 23, 1975) surveyed 500 tourists and reported bad road conditions as the number one complaint.

Due to strong local lobbying, a bicycle path is being included in the highway expansion. Presently the short bicycle trip between Mt. Werner and Steamboat Springs on the main roadway is both frightening and hazardous to bicyclists and motorists alike.

Construction of east, west and bypass segments of the highway is expected to take ten years. Land use along the highway could become more commercial unless regulated by zoning.

In-town traffic itself has increased as Steamboat has grown. Shopping and lodging facilities at Mt. Werner make it in effect a second town center and contribute to the traffic increases between the mountain and the town. In downtown itself, the post office has always generated traffic and parking problems as Steamboat residents do not have delivery service and must pick up their own mail.

A central business district "Parking Study," conducted by the town Planning Commission staff and released in June 1974, related future parking needs to town growth: ". . . as Steamboat continues to grow and as places of residence become more removed from places of commerce, the people of Steamboat will rely more on the automobile to do their daily business."

Alternate transportation modes in Steamboat, while they exist and are growing are still minor in comparison to auto traffic.

Shuttle bus service between downtown and Mt. Werner went on a no-fare basis during the 1974-75 ski season. The service is contracted by the city to the Steamboat Stage Co., and during December 1975 reported a total volume of 22,176 passengers, an 18 percent increase over the previous December. The buses run from 7:30 a.m. to 10 p.m. daily on a 40 minute schedule for a total of 22 runs each way per day.

A survey of skiers conducted in January 1976 for Weiner & Associates found only 22.3 percent of the respondents saying they had ever ridden on the free bus. The sample, chosen at random on lift lines at Mt. Werner, numbered 1,319. The skiers had gotten to the ski area primarily by private car (58.6 percent); 19.2 percent walked, 15.9 percent took the free bus, 2.7 percent took hotel transportation and 3.6 came by other means.

In the Weiner survey, the 22.3 percent figure corresponded with a similar percentage of respondents who were Steamboat residents. Many of the remainder did not even know the service existed.

Among comments elicited by the Weiner survey about the bus service were the following:

> Many people, especially residents of Steamboat II, Strawberry Park and areas to the east of Steamboat, said they would be willing to pay for the bus if it would run farther east and west.
>
> Many people said they had to use their cars in the evenings because the bus did not run past 10:00. Some recommended a minimal charge for the later service. (Note: the bus used to run later but these runs lost too much money because of insufficient patronage.)
>
> Some respondents wanted more stops added to the route, both in town and out.
>
> A "park and ride" system for getting around downtown Steamboat Springs was suggested.
>
> Ski racks should be installed on the outside of the buses; presently riders have to carry their skis onto the bus.
>
> Parking lots at Mt. Werner are small and some are quite far from the lifts, making bus transportation to the ski area attractive to some.
>
> Many people said, however, that they simply preferred driving or hitchhiking to riding the bus.

A bus service for Steamboat Springs senior citizens, bringing them downtown to shop, meet appointments or visit is run by the Kiwanis Club. Transportation for the elderly, a significant problem in Routt County, is discussed under socio-economics.

There is regular air service from Steamboat to Denver and Grand Junction as well as to some smaller Colorado towns. From 1974 to 1976 Frontier Airlines has increased its (winter) service from one to between 3-5 scheduled flights each way per day (Frontier's flights land at the Hayden Airport). Rocky Mountain Airways during this same period has gone from 5 to 8 Steamboat/Denver flights each way per day. In addition, Westair flies in and out from Grand Junction (on Saturdays only and just during the ski season). All incoming flights are met by Steamboat Stage Co. buses.

Continental Trailways buses between Denver and Salt Lake City stop at Steamboat twice daily in both directions. There is rail service but it is freight only, as is trucking.

Finally, a taxi service is operated by Steamboat Taxi Service, Inc. It is year-round, although it shut down briefly in the fall of 1975 due to a shortage of business

Noise

Noise, which is often considered the ultimate environmental insult, is a problem in downtown Steamboat Springs associated directly to motor vehicle traffic. Levels of sound are usually measured in decibels (dB). Whispers might register as 20 to 30 dB on a sound-level meter, while a reading taken near a working jackhammer could be 115 dB or more. The decibel scale is logarithmic so that a twofold increase in sound is shown as an increase of 6 dB. Ear discomfort begins at 120 dB, while pain results at 140 dB. Length of exposure is also important so that long term exposure to perhaps as low as 75 dB is claimed to cause gradual loss of hearing. For this reason many municipalities prescribe an 80 dB limit, measured at 25 feet from the source on the A scale. Steamboat Springs has not adopted such a standard so that awkward nuisance complaints must be used to abate problems.

During the first week of December 1975, measurements were taken by the EIS team using a General Radio Type 2 (model BR 1565-B) instrument. Noise level measurements varied with traffic movement as indicated below:

Airport Road at Elk River Road	40 dB (A)
U.S. 40 at Elk River Road	58-65
U.S. 40 at west edge of City	62-84
Lincoln Ave. (U.S. 40) at 3rd	60-78
Lincoln Ave. (U.S. 40) at 5th	58-91
City Hall	53-65

Noise measurements at the Mt. Werner plant remained near 45 dB with little fluctuation, while the Steamboat Springs site measures in the 50-55 dB range peaking to 65 with traffic movement in the adjacent residential area. Based on resident interviews and measurements, noise does not appear to be an issue associated with this facilities plan. However, traffic noise will continue to be a problem even with U.S. 40 improvements.

Solid Waste

The Steamboat Springs area has been using a designated solid waste disposal site near Milner, 11 miles west of the city. According to State Health Department officials, this site is, or soon will be, permanently closed because of capacity limitations. The County has been urged to provide a site near Steamboat, however, none has been proposed to date. A suggestion of using an existing Oak Creek site (25 miles southeast) is considered unreasonable, principally because of its distance. Disposal of well digested sludge at Oak Creek would be considered acceptable to State Health because no water table leaching would be present at this elevated site.

Demographics

Routt County is 171 miles from Denver. Its northern edge borders Wyoming, and the Colorado counties surrounding it are Jackson, Grand, Eagle, Garfield, Rio Blanco and Moffat. The Routt County subdivisions include Hayden, Oak Creek, Steamboat Springs and Yampa. The county seat is Steamboat Springs.

Overall, the population of Routt County consists of native born Coloradians with an education comparable to the statewide average. Colorado, along with six other states, ranks second, only to Utah (12.5) in the U.S. median years of education. There are fewer children under the age of five than is the case in general in the state.

The following discussion is based upon 1970 Census data. The 1970 Routt County population is divided into 83.1 percent rural nonfarm and 16.9 percent rural farm residents. Of the 353 farms in 1970, 291 had sales of $10,000 to $39,999; and 15.5 percent exceeded $40,000. This compares favorably with farms throughout Colorado, where only 42.7 percent of farms had sales between $10,000 and $39,000. The short growing season is reflected in agricultural production of 13.4 percent in crops, and 85.7 percent in livestock and livestock products.

The median income for Routt County is $7,494 as compared with the state's $9,555. Routt County families making more than $15,000 represent only 11.7 percent of the population while the state's percentage is 19.7. Percapita income is $2,631 in Routt compared to $3.106 for the state.

There are no racial minorities reflected in the 1,122 rural farm population, and 31 minorities in the 5,479 rural nonfarm population. The median school years completed were 12.4, identical with the state average.

Persons under five years of age, 7.5 percent, are fewer than the state's 8.4 percent, and those over 65 years of age exceed the state average, 9.7 compared with 8.5 percent. Both of these differences are reflected in the Routt County median age of 28.5, 2.2 years above the state median.

Recreation

Routt County and Steamboat Springs offer a wide range of recreational activities. Downhill skiing is the area's main attraction, so much so, that ski-related income and employment dominate the local economy. LTV's expansion of the Mt. Werner slopes was followed by development of the Stagecoach area, 25 miles south of Steamboat Springs, and plans for construction of the Columbine ski area, 35 miles to the north of town at Steamboat Lake. Although the last two are not operating, skiers from around the country continue to flock in record numbers to the existing trails on Mt. Werner. Meanwhile, developers hope that new lifts can be built at Harrison Creek about eight miles southeast of Steamboat Springs.

Downhill skiing is complemented by a host of other winter sports. As noted by Charles Gathers and Associates, there is virtually unlimited terrain for cross-country skiing. Strawberry Park, just north of Steamboat Springs, was to have been the site for the 1976 Olympic cross-country events. Ski jumping, a popular local activity, would have been held at Howelson Hill, adjacent to and south of downtown Steamboat.

There is also ice fishing at Steamboat and Pearl Lakes, swimming at heated pools in downtown Steamboat Springs and on Mt. Werner, skating and hockey at Howelson Hill, and practically unlimited areas for sledding, tobogganing, snowmobiling and snowshoeing.

In the the summer cool nights and warm days contribute much to the area's popularity as a resort. LTV and the Steamboat Springs Chamber/Resort Association have joined with other ski counties in Colorado to promote their warm weather activities. LTV operates the Cliff Buchholz tennis ranch and a golf course on the mountain. And, needless to say, the area's vast open lands, woods, mountains and streams provide an excellent locale for hiking, camping, fishing, horseback riding and just plain sightseeing.

Between the summer and winter seasons, these same locales become crowded with hunters, seeking the variety of wild game in the area, especially elk and deer. Residents also like to hunt, often as a practical way of reducing food costs in a place where making ends meet can be difficult.

Howelsen Hill Ski Jump

Reproduced from
best available copy.

Steamboat Ski Area (Mt. Werner)

Aesthetics

The summer lushness of the Yampa Valley is especially impressive when viewed from a hilltop. The swift flowing Yampa and innumerable fishing steams flow through forests and lush meadows. What had been grazing land for abundant game has now become largely cattle range. But the Ute summer hunting grounds remain a mecca for sport hunters and fishermen, and more recently cross country skiers and backpackers.

The largest group of mineral springs in Colorado give Steamboat Springs a unique character. Skiing has been a tradition here long before it was a major industry. Otherwise, the town is distinguished, especially from other ski resorts, by its enduring ranch character: cowboy hats ride the heads of genuine ranchers, and the breadth of Lincoln Avenue is a reminder that it was used, often, for running cattle.

Besides the town, the other noticeable manmade features of the area include: cuts on Mt. Werner for skiing and the resort facilities below, pronounced road cuts for access below the Ramada Inn; the airport; the railroad; highways and associated strip development; and residential and commercial development, including trailer parks, single family lots and multi-family structure complexes.

Culture

Within the last five years, the arts in Steamboat Springs have undergone a dramatic expansion. A Western history room was opened in the Bud Werner Memorial Library. The Arts and Humanities Council raised over $30,000 in funds to restore the old Denver and Rio Grande Western depot as a cultural center for the community. And an annual three-week summer Arts Festival was instituted in 1974. The Festival in 1975 included visual arts, theatre, dance and performances and workshops of the Colorado Philharmonic and Denver Symphony Orchestras.

These joined the Tread of the Pioneers Museum, Parry-Mansfield School's summer drama and dance programs and some local art galleries on the Steamboat Springs culture scene.

In addition, a number of young artists e moved into the area. One of them, painter Dennis Pendleton, is quoted in *The Steamboat Pilot* (November 13, 1975) as saying that, "No other community in Colorado offers the same kind of help and enthusiasm as is found here."

Other Federal Projects

A number of other Projects involving federal or state government should have an impact on the study area. They are summarized in the text that follows:

The proposed Yamcolo project, a 9,000 acre-foot reservoir to be situated on the upper Yampa (Bear) River in Garfield County, south of Routt County. To be used for irrigation, it will make the river level easy to predict and make planning easier for Steamboat's sewage treatment plant, according to Steamboat Springs City Manager, Roger McCoy. Sources of funding for the reservoir could include industry, a .57 mill levy increase in Garfield County, a combination loan-grant from the federal government under the Small Projects Act, and a $1 million loan from the Colorado Water Conservation Fund.

New coal leases to be granted by the Bureau of Land Management (BLM) after completion of an environmental impact statement. The impact on the study area will be felt in two ways. First, there will be a population increase caused by miners who will prefer to live in Steamboat Springs for its commercial, recreational and other advantages, even though the mines are in southern and western Routt County. Second, there will be temporary sedimentation problems in th Yampa River caused by road construction and related activities. A possibility that environmental groups will file suit against the BLM's environmental impact statement as they have done in Wyoming and Montana could prevent or delay the granting of the leases.

The Harrison Creek ski area, a proposed development located approximately eight miles southeast of Steamboat. Its capacity could be for 6,000 to 8,000 skiers daily. A decision on whether to approve the plan or not must wait until the U.S. Forest Service has completed a regional study on wilderness and recreational needs for the Routt National Forest, in which Harrison Creek would be located.

A plan by the U.S. Bureau of Reclamation to build several hydroelectric power plants and transmission systems, which will interconnect with federally supported steam plants operated by the Rural Electric Associations. The latter includes plants at Hayden and Craig run by the Colorado-Ute Electric Association.

A proposed improvement of U.S. Highway 40 by the Colorado Division of Highways and the U.S. Department of Transportation. The project, as described in the draft environmental impact statement, "would upgrade, modernize, and improve safety conditions and would relieve congestion on a ten-mile segment of U.S. 40, east and west of Steamboat Springs." However, this project could pose water runoff problems. Coordination must occur between engineers for the road and sewage facilities to prevent any drainage hazards. The relocation of sewage outfalls may also be necessary, since they cannot be below a major highway.

A possible water diversion, the Sheephorn Project, which will affect some 600,000 acre-feet per year of "runoff" water along the Continental Divide. Fifty agencies, groups, and individuals recently filed court protests on the plan as proposed by Vidler Tunner Water Company, a private outfit which along with the city of Golden, Colorado, wants to take water from the Colorado, Yampa and Blue Rivers to Golden and the Denver metropolitan area. Most of the 50 entities involved are local, county or regional, not state or federal. However, in a separate but related suit, Vidler Tunnel Water Co. and the City of Golden applied to the Federal Power Commission (FPC) for permission to begin a preliminary study of potential hydroelectric facilities. The FPC licenses all such facilities in the country. If a go-ahead is granted to the company, then all public lands in the project will be withdrawn from any other entity until the FPC makes a decision.

V. Description of Proposed Alternatives

The planning effort for wastewater facilities has combined the comments and recommendations of numerous individuals representing Wright-McLaughlin Engineers, EPA, Colorado Health Department, City of Steamboat Springs, SSRSA member districts, Weiner & Associates, Citizens Advisory Committee and the General Advisory Group. This consortium narrowed down an original list of 55 sewage treatment configurations to four basic alternatives plus a sub-alternative and a no-action approach. The basic alternatives are shown in Table V-1; all of them use the existing Mt. Werner District facilities, for flow leveling, while the Steamboat Springs plant is retired in 1985 with Alternatives III and IV.

TABLE V-1

FINAL FOUR TREATMENT PLANT ALTERNATIVES

Alt. No.	Plant Location	Process	Facilities Plan Designation
I	Steamboat Springs Lagoons	Extended Aeration-Advanced Biological Treatment	Steamboat E/A-ABT
II	Steamboat Springs Lagoons	Extended Aeration-Mixed Advanced Waste Treatment	Steamboat E/A-M/AWT
III	Midway Regional Site	Extended Aeration-Advanced Biological Treatment	Midway E/A-ABT
IV	Midway Regional Site	Extended Aeration-Mixed Advanced Waste Treatment	Midway E/A-M/AWT

It should be noted that the proposed structural alternatives deal only with domestic sewage. They do not specify facilities for the control and treatment of urban and agricultural runoff or programs to control river bank erosion. However, Wright-McLaughlin states that the proposed alternatives have good compatibility for treatment of non-point discharges from urban areas, resulting from snowmelt and storm runoff. Urban runoff could be detained at selected locations and metered into the sewage collection system during off-peak hours. Other runoff could be treated by detention/settling only, with some runoff receiving land treatment directly. The details of these systems are discussed in Chapter VIII, Mitigation Measures.

Alternative I - Present Site and In-Plant Tertiary Treatment

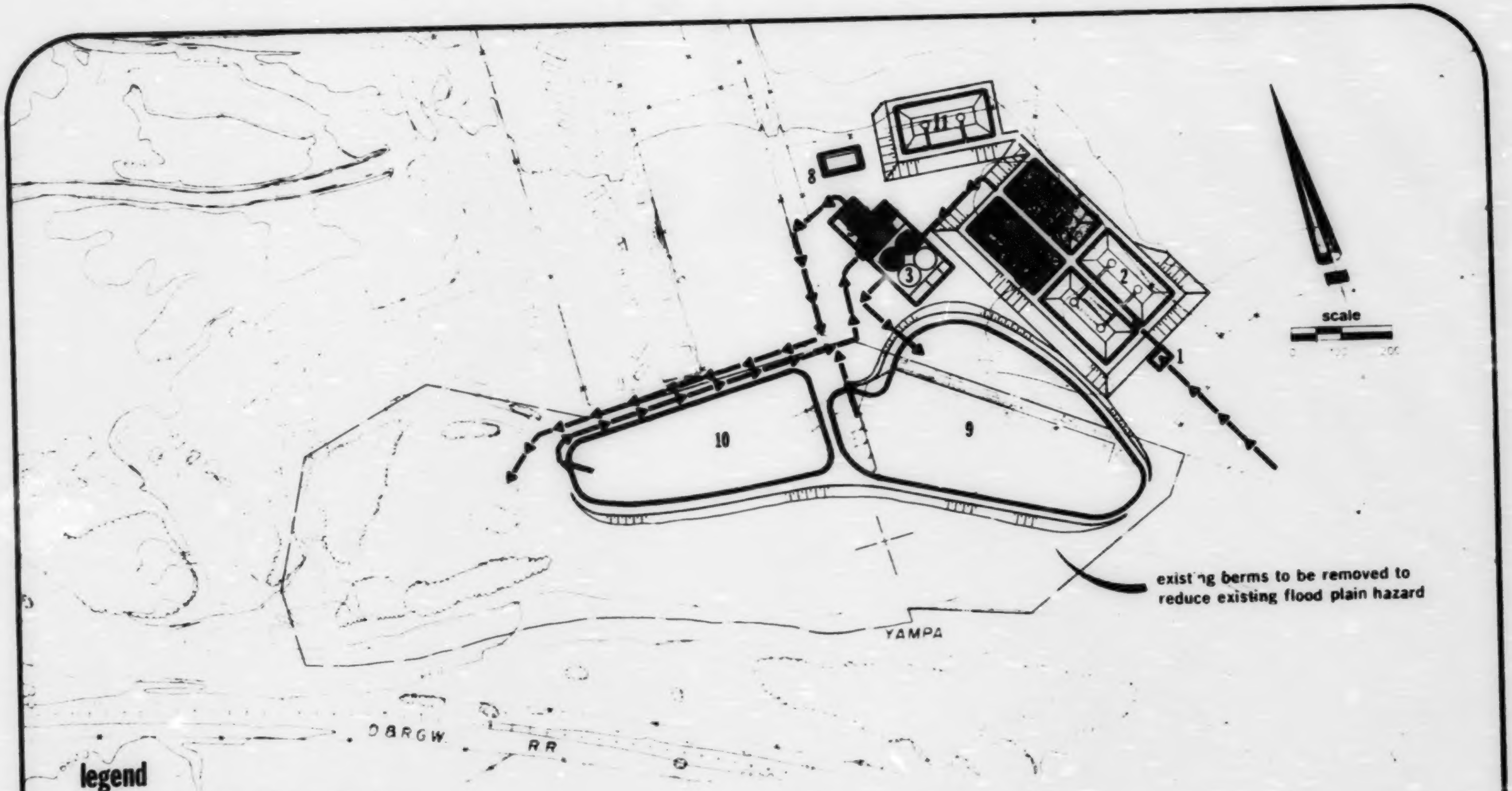
Alternative I calls for the long-term, continued use of the present city lagoon site as located on Study Map 1. This site is located wholly within the 100-year flood plain and adjacent to nearby residences. Regional treatment at this site would require pumping of sewage from Steamboat II, KOA Campground, Sleepy Bear, and Riverside (already pumping to site) via a 16,400 foot interceptor. The land use implications of this pumping are discussed in Chapter IV.

The aerated lagoons at the present site would be modified for flow leveling and polishing purposes. The secondary treatment would be provided by new extended aeration facilities, but would require far less space, thus accomodating needed tertiary facilities. The tertiary treatment for ammonia would be achieved via an advanced biological process. This would involve activated sludge nitrification basins with secondary clarification and sludge return. Dual media filtration would also be used to remove suspended solids and organic material (BOD_5). Figure 10 displays this process configuration. Although very little sludge would be created by these processes, the accumulated sludge would be deposited on nearby agricultural lands. Application methods include the use of a tank truck that could spray or inject the sludge.

First phase construction would include construction of pre-treatment facilities, three extended aeration basins, two clarifiers, modification of the existing lagoons, two dual media filter units and a accessories, disinfection facilities, dechlorination facilities and the complete sludge system.

Alternative II - Present Site and Summertime Land Treatment

This alternative also uses the Steamboat Springs lagoons for the long-term plant site, plus the lands in Figure 5 for land application. The configuration of the plant is shown in Figure 11. It is similar to that of Alternative I; however, the extended aeration basins are smaller because less ammonia treatment is required when land treatment is employed. The in-plant tertiary treatment will feature ammonia removal plus a dual-media filter for removal of suspended solids and organic material. The removal of residual chlorine would be accomplished by SO_2 addition. The treatment of sludge would occur on Meadow Industries lands by using surface spreading with a flexible hose or by applying it from a tank truck. The treatment of effluent would occur in the plant 100 percent of the time during the non-irrigation season



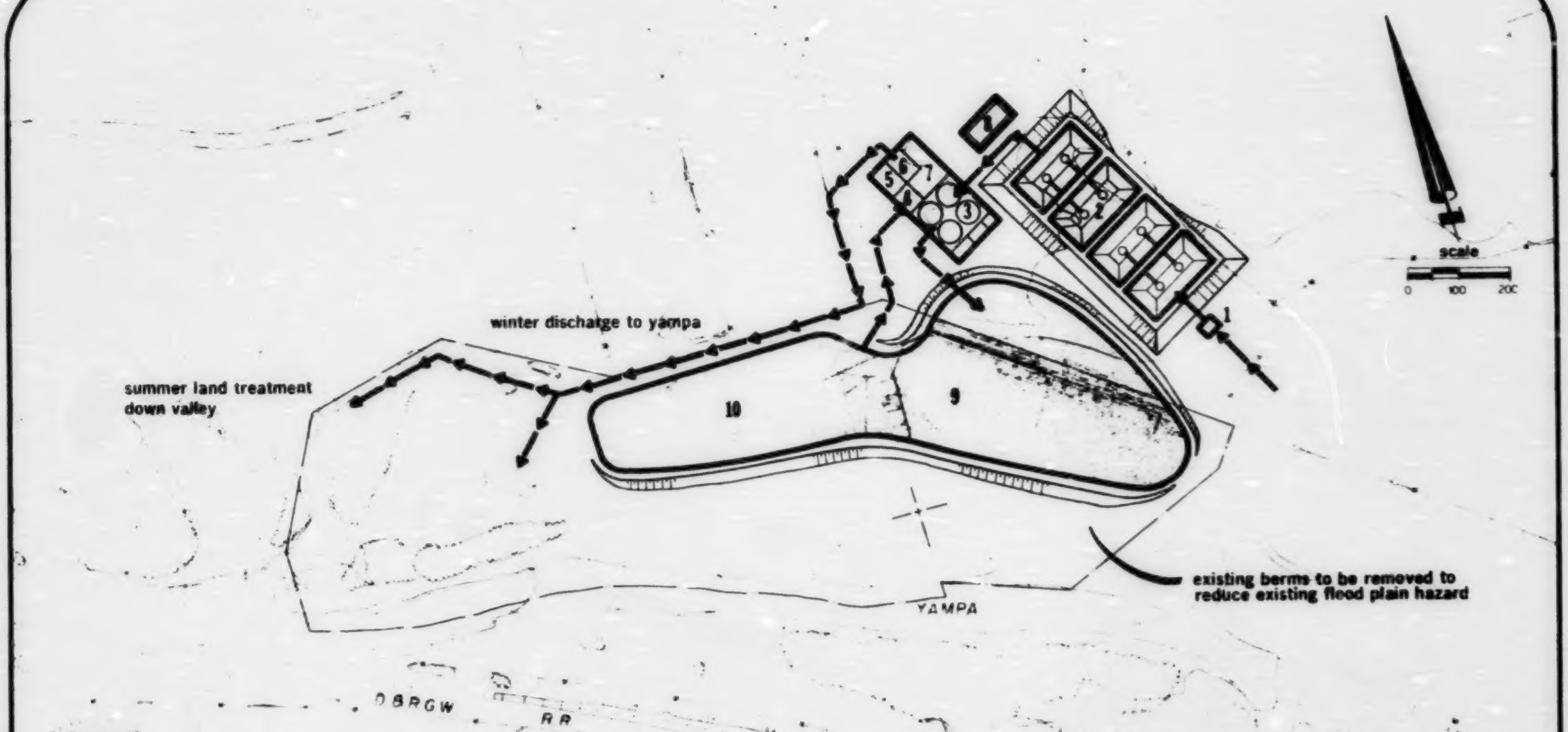
exist'ng berms to be removed to reduce existing flood plain hazard

legend

	denotes first phase construction	7	backwash tank, sludge facilities, return pumping facilities for nitrification, sludge handling and trucking facilities
1	pretreatment facility	8	emergency sludge drying beds
2	4-extended aeration basins	9	flow leveling & polishing pond (aerated)
3	4-clarifiers	10	flow leveling pond
4	pumps for filters and filter aid chemicals	11	aerobic sludge digestion
5	dual media filters and chemical mixing		
6	chlorine feed and contact chamber		

1 STEAMBOAT EXTENDED AERATION ADVANCED BIOLOGICAL TREATMENT

Figure 10


scale
0
100
200
1
2
3
4
5
6
7
8
9
10
winter discharge to yampa
summer land treatment
down valley
existing berms to be removed to
reduce existing flood plain hazard
YAMPA
D&RGW
RR

legend

denotes first phase construction

1 pretreatment facility
2 4-extended aeration basins
3 4-clarifiers
4 pumps for filters and filter aid chemicals
5 dual media filters and chemical mixing
6 chlorine feed and contact chamber, treated wastewater pumping
7 back wash tank and sludge facilities
8 emergency sludge drying buds
9 flow leveling & polishing pond (aerated)

2 STEAMBOAT EXTENDED AERATION MIXED ADVANCED WASTE TREATMENT

Figure 11

and 60 percent during the irrigation season. The remaining forty percent would be put on the Meadow Industries land during the irrigation season. Application would be by surface spreading, using existing contour ditches.

The construction of the new facilities is designed to take place in 1978. It includes a pre-treatment facility, two extended aeration basins, two clarifiers, consolidation of the existing lagoons into one basin, two dual-media filters, a dechlorination facility and installation of a portion of the land treatment equipment.

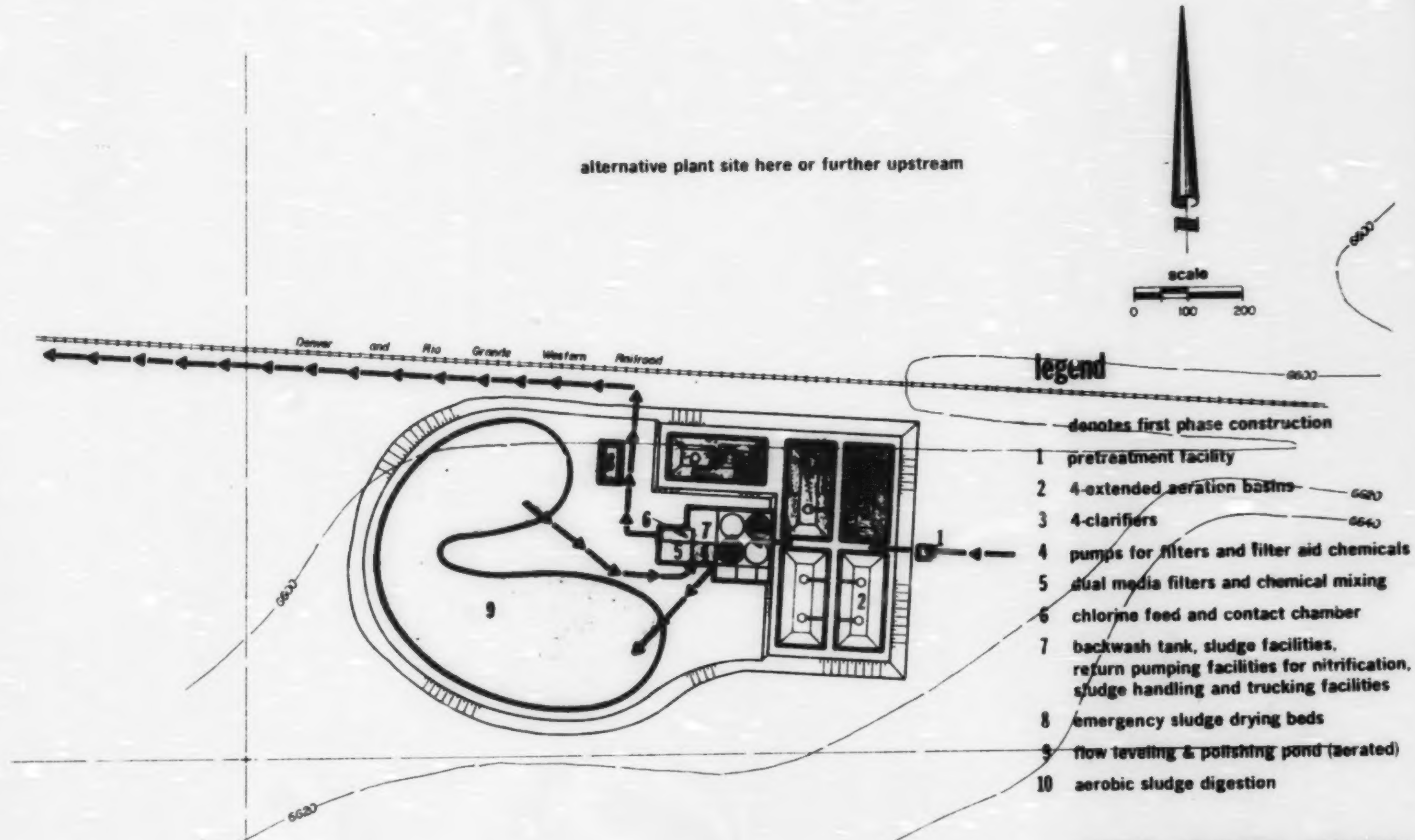
Alternative III - Midway Site and In-Plant Tertiary Treatment

This alternative is similar to Alternative I and it continues the use of the Steamboat Springs lagoons until retirement in 1985. As a result only limited facilities would be constructed at the Midway Site during the first phase of construction. This site is to be located in the general area shown in Figure 12. Construction phasing calls for two extended aeration basins and clarifiers, to be used for summer nitrification and back-up BOD removal in the winter. Other facilities would include an aerated flow leveling pond, two dual-media filters and disinfection facilities, as shown in Figure 12. A facility not shown in the diagram would be a dechlorination system using SO_2 addition. Any sludge generated by the proposed processes would be deposited on nearby agricultural lands.

The collection system for conveying raw wastewater to the plant would utilize the current Mt. Werner lagoons for flow leveling purposes. In addition, a new 18-inch, 7,600 foot line would parallel the existing Steamboat Springs outfall. Another outfall (10,800 ft @ 24") would be laid across the Yampa just below the City lagoons and parallel the river to the Midway Site; it would operate by gravity flow. Riverside would continue to pump to the City lagoons until its retirement in 1985, after which an interceptor would cross the river connecting to the new outfall. Sleepy Bear and KOA would like to connect to the new outfall during the first phase of construction by crossing the river in a common interceptor. Finally, Steamboat II would be pumped across the river via the railroad trestle.

Alternative IV - Midway Site and Summertime Land Treatment

This alternative phases out the Steamboat Springs lagoons in 1985 in a manner similar to Alternative III. Interceptor and outfall construction is also the same as described for Alternative III. The principal difference is the tertiary treatment method for ammonia. In this case, the approach



alternative plant site here or further upstream
scale
0
100
200
Denver and Rio Grande Western Railroad
legend
denotes first phase construction
1 pretreatment facility
2 4-extended aeration basins
3 4-clarifiers
4 pumps for filters and filter aid chemicals
5 dual media filters and chemical mixing
6 chlorine feed and contact chamber
7 backwash tank, sludge facilities, return pumping facilities for nitrification, sludge handling and trucking facilities
8 emergency sludge drying beds
9 flow leveling & polishing pond (aerated)
10 aerobic sludge digestion
6600
6620
6640
1
2
3
5
6
7
8
9

3 MIDWAY EXTENDED AERATION ADVANCED BIOLOGICAL TREATMENT

Figure 12

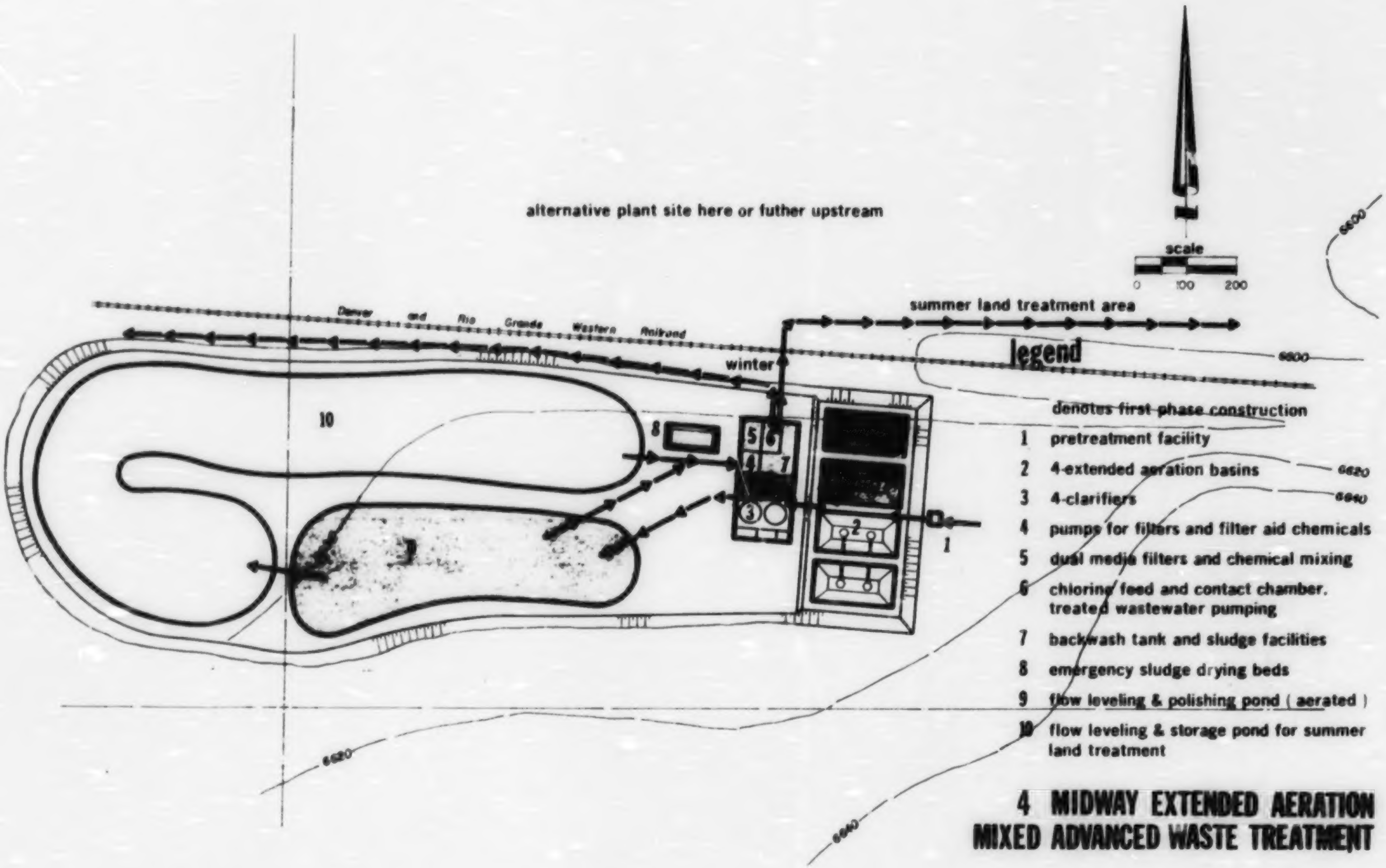
outlined for Alternative II, i.e., 40 percent summertime land treatment would be used in conjunction with 60 percent in-plant treatment. Figure 13 shows the plant construction would include the first aerated pond, one clarifier, two dual-media filters, disinfection facilities, dechlorination facilities and partial land treatment and sludge facilities.

Mt. Werner Sub-Alternative

The Mt. Werner sub-alternative is proposed by the Mt. Werner Water and Sanitation District and LTV. It would involve the treatment and diversion of 410,000 gpd from Mt. Werner's wastewater treatment plant to the LTV golf course. Water would be pumped to the existing LTV reservoir, to be applied according to a variable schedule. In exchange for the effluent, 0.6 cfs of natural flow would remain in Fish Creek instead of being treated as domestic water and applied to the golf course. The resultant effect on Fish Creek would be an elevation in minimum summer flow from 0.5 to 1.1 cfs.

No-Action Alternative

As the title implies, no capital expansion program would be initiated and the existing treatment facilities would continue in their present fashion.


alternative plant site here or futher upstream
scale
0
100
200
summer land treatment area
Denver and Rio Grande Western Railroad
winter
10
8
5
6
4
7
3
2
1
9
6600
6600
6620
6640
6620
6640

legend

denotes first phase construction

1 pretreatment facility
2 4-extended aeration basins
3 4-clarifiers
4 pumps for filters and filter aid chemicals
5 dual media filters and chemical mixing
6 chlorine feed and contact chamber, treated wastewater pumping
7 backwash tank and sludge facilities
8 emergency sludge drying beds
9 flow leveling & polishing pond (aerated)
10 flow leveling & storage pond for summer land treatment

4 MIDWAY EXTENDED AERATION MIXED ADVANCED WASTE TREATMENT

Figure 13

VI. Evaluation of Alternatives

This section sets forth the projected impacts associated with the four action alternatives and the one no-action alternative. Alternatives I and III refer to in-plant treatment at the existing and Midway sites, respectively. Alternatives II and IV refer to the land treatment options at the existing and Midway sites, while Alternative V is the no-action alternative. All of these alternatives are discussed in the text that follows under the headings of water quality, geology, soils, biology, air quality, land use and cost.

Water Quality

The impacts on the area's water quality can be divided into those on surface waters and groundwaters. If any of the action alternatives are implemented, and the discharge regulations are adhered to, the impacts on surface waters should be positive. However, the overall quality could still deteriorate if urban and agricultural runoff are not checked. If the no-action alternative occurs, the impact on surface waters would be negative; for increased effluent loads of the future would exceed the capacity of the existing plants to adequately-treat them. The resultant discharges would be of a lower quality and the impacts on the Yampa River would be negative. If a land treatment alternative is developed, both surface waters and groundwaters could be impacted. The surface waters could receive impacts from underdrains if the lowlands are irrigated. Their quality would have to comply with the discharge permit. The impact on groundwaters depends on the quality of the effluent and on application rates. The resultant impact should not contribute to water quality changes that exceed EPA's recommended drinking water standards. The details of these contingencies are discussed in the text that follows.

Alternatives I and III

Alternatives I and III are the in-plant alternatives at the existing site and the midway site, respectively. Their operational goals are the discharge of effluents that meet the 1983 standards, as delineated in the previous section on water quality goals. Assuming these standards are met or exceeded, the impact on the existing Yampa River ecosystem would be beneficial.

Site Selection: The two sites being proposed for the secondary treatment facilities are the current and the Midway site, each of which is described earlier. The Midway site has a more westerly location and lower elevation, where it can receive sewage from the entire SSRSA study area by gravity, except for a small amount of pumping at Steamboat II, KOA and Sleepy Bear.

Such a system provides for greater operating reliability and lesser operation and maintenance costs. This system could not be used as extensively at the existing site due to this site's higher elevation. However, if land treatment is employed, the existing site would be in a better position to provide gravity flow to the lowlands near Midway. Based on these considerations, the Midway Site appears to be the best choice for the treatment plant.

Another consideration is the choice of a sludge disposal site. This choice can be determined by guidelines developed at both federal and state levels. The federal guidelines, published June 3, 1976 in the Federal Register, are called Municipal Sludge Management, Environmental Factors. A summary of these factors are listed below:

- Non agricultural use of sludge disposal is recommended over uses where sludge products could be directly ingested by humans.
- The pH of the sludge/soil complex is recommended to be 6.5 or greater to prevent solubilization and migration of most metal ions.
- Stabilization is recommended to reduce odors and pathogens.
- Incorporation methods are recommended as a means of improving public acceptance of sludge application by decreasing odor generation and unsightly deposits on crops.
- Spray application of digested sludge is acceptable, providing the transport of aerosols is minimized beyond the application area. The use of low-pressure sprays, short risers or a remote application site is recommended.
- Determine N, P and K requirements for the disposal site; supplemental potassium fertilizer is often required to provide a balanced macro-nutrient composition.
- Add no more plant-available nitrogen than twice the plant requirement. The plant-available nitrogen equals NH_3-N, and NO_3-N from the soil, plus NH_3-N, NO_3-N and 0.15 organic -N from the sludge. Volitilization of sludge NH_3-N is about 50 percent.
- A monitoring plan is required when application rates exceed 10 dry tons per acre per year for liquid digested sludge or 50 dry tons per acre for dried or dewatered sludge deposited over three years.
- Forage or pasture crops should not be consumed by animals when these crops are physically covered with sludge. When direct ingestion is possible, the sludge's lead content should not exceed 1000 mg per kg dry weight and cadmium content should not exceed 1000 mg per kg dry weight.
- An EPA advanced waste treatment research laboratory is available for consultation.

The state guidelines on this matter are based partially on the federal guidelines although with some modifications and additions. (Colorado Dept. of Health, 1976). These additional factors are listed below:

- Stabilized sludge applied to the land should possess the following quality on a dry weight basis - N (2 to 6%), P (2 to 6%), K (.25 to 1.00%), Zn (500 to 3000 ppm), Cu (250 to 1500 ppm), Pb (100 to 1500 ppm), Ni (25 to 1000 ppm) and Cd (5 to 30 ppm).
- Sludge may be stored, providing it is adequately stabilized and surface waters are protected.
- Mean annual water table should be greater than seven feet and the nearest well should be greater than 150 feet away.
- Slope of the application site should be less than five percent or soil losses should be less then five tons per acre per year, calculated by the Universal Soil Loss Equation.

Since project alternatives I and III involve the deposition of sludge on nearby agricultural land, the preceding guidelines could be helpful. However, if either alternative is adopted a definite site that conforms to these guidelines should be developed, studied and approved prior to approval of Step III grant monies.

Secondary Treatment: Two types of biological treatment systems have been proposed for the secondary level treatment. The first is the extended aeration-activated sludge process; the second is the newer Bio-Disc rotating biological filter process. The configuration of these treatment schemes would be the same at either of the two sites.

The comparative waste treatment efficiencies of these two processes are similar. Both have achieved greater than 85 percent removal of BOD and suspended solids and both are fairly resistant to upset conditions, requiring a minimum of operator attention. The Bio-Disc process does not have a sludge return requirement which implies greater simplicity, but it does require primary clarification and subsequent anerobic digestion of the sludges. Waste sludges from the extended aeration process would be aerobically digested and would generate less sludge than the Bio-Disc system. This process would be easier to operate and less susceptible to upset conditions, but it would demand a higher power requirement for the oxygen supply. Despite this requirement, the extended aeration-activated sludge system is preferable due to higher costs of purchasing a Bio-Disc system.

Tertiary Treatment: The in-plant biological tertiary treatment systems considered for the Steamboat Springs region consist of an activated sludge nitrification facility and the Bio-Disc rotating filter system. If the Bio-Disc system is used, an intermediate secondary clarification system would not be required. The activated sludge facility would consist of a separate entity located in series with an extended aeration treatment step. The treatment efficiencies documented by both processes are high enough to meet the ammonia discharge levels, calculated by the design engineer for the proposed ammonia discharges. Both of these nitrification systems are temperature dependent and the rate of ammonia conversion decreases as influent temperature decreases. Thus, the development of a good, active biomass for the nitrification process could be a problem during the winter months in the Steamboat area. This consideration would be especially applicable to BOD removal rates. In addition, since biological systems are not easily or quickly started at these temperatures, both of these systems should probably be maintained on a year round basis. Switching between an inplant and a land irrigation system, and then back again, would likely raise serious operating and control problems.

Since the Bio-Disc system does not require a sludge return stream, it is inherently easier to operate and probably less susceptible to upset via operator error. However, capital costs would be much greater in the Bio-Disc System and would probably preclude its use.

Process Performance: The sensitive parameters to be handled by the treatment processes include ammonia, chlorine, BOD and suspended solids. Ammonia would be controlled by one of the two previously-mentioned biological systems, where nitrification would convert ammonia to nitrate. Either of these systems is designed to produce a discharge that would result in a river concentration less than 0.02 mg/ℓ of un-ionized ammonia. This level has been selected by the EPA to protect fish and aquatic life. The possibility of it being exceeded would be greatest during the summer if in-plant processes are providing the tertiary treatment. During the rest of the year, the possibilities would be slight. Due to these conditions the Colorado Water Quality Control Division is expected to issue a variable ammonia discharge permit and will provide requirements for operator monitoring. The ammonia portion of the new permit will be implemented after upgrading of the new facilities.

Associated with future reductions in ammonia will be increases in nitrates. The effect of these nitrates cannot be predicted, yet in certain situations they are known to stimulate algal growths. The EPA recognizes this potential problem and is in the process of modifying the test used to assess nitrates in lakes, so it can be applied to streams. When this modification is made, tests will be run on the Yampa River and safe levels of nitrate loading will be developed.

The situation for chlorine is regulated by their current discharge permit, which specifies that discharges of residual chlorine should be less than 0.5 mg/ℓ. The existing permit expires on June 30, 1976; however, a revised permit from the Colorado Water Quality Control Division will include a new limitation for total residual chlorine, to be complied with upon upgrading the facilities. This revision will reflect the EPA's recent research on the matter.

The proposed EPA Criteria for Water Quality, October 1973 recommends that maximum acceptable residual chlorine concentrations in waters be less than 0.003 mg/l for chronic exposure. Maximum concentrations could be 0.05 mg/l for a period of up to 30 minutes in any 24-hour period. However, recent communications from Dr. Brungs of the National Water Quality Laboratory, Duluth, indicate that these values should be re-evaluated. The revised recommendations are as follows:

Type of Chlorine Use	Concentration of Total Residual Chlorine	Degree of Protection
Continuous	A. Not to exceed 0.01 mg/l	This concentration would not protect trout and salmon and some important fish-food organisms; it could be partially lethal to sensitive life stages of sensitive fish species.
	B. Not to exceed 0.002 mg/l	This concentration would protect most aquatic organisms.
Intermittent	A. For a period of 2 hours a day, up to, but not to exceed, 0.2 mg/l.	This concentration would not protect trout and salmon.
	B. For a period of 2 hours a day, up to, but not to exceed 0.04 mg/l.	This concentration should protect most species of fish.

Dr. Brungs further indicates that, "if free chlorine persists, more restrictive criteria are warranted. Alternate procedures or substitutes for chlorination should be investigated." Dr. Brungs feels that this approach is well founded since residual chlorine is more persistent than the few minutes or hours indicated by some authorities. Further, the current state of art in aquatic chemistry is not sophisticated enough to allow chlorine modeling in streams, so that a case-by-case evaluation may be necessary.

There are several analytical methods currently being used to determine residual chlorine. Some, like the orthotolidine method, are subject to gross interference from other oxidizing agents, turbidity, and color. Additionally, orthotolidine is extremely instable at low pH values and cannot be used to measure chloramines or total residual chlorine. Since the toxicity of free chlorine and chloramines are of the same order of magnitude, Brungs recommends that the amperometric titration method be used. He indicates that Duluth has consistently measured total residual chlorine in effluents at the 0.002 mg/ℓ (+100%) level using the amperometric method. Marlin Helming, of EPA's Denver laboratory, has stated that they are able to measure total residual chlorine in effluents down to the 0.02 mg/ℓ +50%). It appears, therefore, that the detectability of total residual chlorine should not present a problem.

Methods of dechlorination and alternate means of disinfection are available. However, recent work by EPA has indicated that, perhaps, not all of the total residual chlorine is being removed with several of the currently used methods of dechlorination. Both salmonid and non-salmonid fish are apparently able to detect chlorine below analytical detection limits. Zones of passage must be maintained in streams to prevent avoidance reactions. Regarding alternate methods of disinfection, such as ozone or other nascent compounds, consideration must be given to the potential impact which they or their byproducts can have on non-target organisms.

It has been recommended that an aeration system be used to dissipate the chlorine prior to discharge. The ability of aeration to accomplish that goal is seriously questioned. Wright-McLaughlin Engineers were advised to review this proposal and to re-evaluate dechlorination and alternate means of disinfection. Consequently complete chlorine removal using SO_2 as the reducing agent has been included in all alternatives.

The treatment of BOD and suspended solids should be adequately handled by the proposed systems. The BOD removal rates will vary with temperature, being lowest during the winter. However, the dual-media filter will assit the biological processes during this time by filtering out organic matter. The suspended solids will also be removed by this process, as well as by settling.

Despite these proposals to control the quality of the discharge, one natural pollutant could still reduce the quality of the Yampa River. This parameter is zinc, which appears in the influent at the existing Steamboat Springs plant (Table VI-1). Although this element should concentrate in the sludge, the level of concentration is not known. If no concentration occurs, it could still be diluted by the river. During other periods it could actually dilute the river's concentration, which varies from zero to 0.55 mg/ℓ at nearby monitoring stations. In either case the potential impact cannot be determined with existing information. Consequently, the EPA recommends future monitoring of zinc in the effluent, as well as the immediate receiving waters. Such monitoring is not a prerequisite for the construction grants program, yet the results of such monitoring will improve our understanding of a potential hazard to the water quality of the Yampa River. This information could also provide a basis for future control programs if deemed necessary or feasible.

Table VI-1

Influent Water Quality[1]

Parameter	Concentration (mg/1)
Suspended Solids	45
Total Dissolved Solids	255
Phenols	<0.001
Oil and Grease	17
Ammonia-nitrogen	6.2
Organic-nitrogen	10.5
Kjeldahl-nitrogen	18
Nitrate-nitrogen	1.3
Phosphorus	2.6
Settleable Solids	7.0
Trace Elements[2]	
Aluminum	0.5
Boron	0.5
Copper	0.01
Iron	0.1
Lithium	0.1
Manganese	0.1
Strontium	0.1
Silver	0.001
Titanium	0.01
Zinc	0.02

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[1] Received April 12, 1976; analyzed by the Industrial Laboratories Company.

[2] Other trace element below level of detection.

Alternatives II and IV

The two land treatment Alternatives for tertiary treatment of wastewaters are alternatives II and IV. Both of these alternatives would divert secondary effluent, treated and disinfected, into the valley bottomlands near the Yampa River or into nearby uplands. Both of these lands would be irrigated during the normal irrigation season, extending from July to mid-October. As a corollary to this approach, sludge would also be applied to these lands, distributed on a year-round basis.

The land application of wastes for wastewater treatment is not a new practice. A survey conducted by the American Public Works Association (1972) documents at least 315 municipal systems that use this approach (Sullivan, Cohn, and Baxter, 1973). A second study conducted in the Rocky Mountain-Prairie Region identifies 19 municipal sites that use the land application approach (Dean, 1974). These latter sites occur in Colorado, Montana, North Dakota, South Dakota, Utah, and Wyoming, where applications are used for irrigation of golf courses, crops, hay and/or pastures.

Land application approaches are generally classified as irrigation, overland flow, and infiltration-percolation. The approach for Steamboat Springs is intended to be irrigation and/or irrigation-overland flow. Irrigation, in this sense, would be construed as the controlled discharge of effluent to support plant growth. The basic environmental assets of this action would be: 1) to renovate the waste effluent prior to discharge; and 2) to beneficially support crop production. The principal constituents to be removed would be ammonia-nitrogen, biochemical oxygen demand and suspended solids.

Land application uses the land and its associated biological systems as a living filter. The renovation is both microbiological and physiochemical in nature and includes chemical precipitation, adsorption, absorption, filtration, plant root uptake and oxidation. Many of the impurities that are entrapped in the soil are eventually used by higher plants as growth components and, in the process, the wastewater receives the equivalent to tertiary treatment.

The discussion that follows describes this kind of treatment, under the headings of climate, wastewater application, site and soils, treatment efficiency, effects of nitrogen on groundwaters, effects of trace elements on groundwater, health considerations, and surface water runoff.

Climate: The climatology of a specific site affects the length of its growing season, the type of crop production, the kinetics of the breakdown of the applied wastes, and the quantity of wastewater that can be disposed. The operation of existing land treatment facilities have been documented for northern climates (Dean, R., 1974; Malhatra, S.K., et al., 1975; Sanks, R. L., et al., 1976; Sopper, W. E., et al., 1975; and Sullivan, R. H., et al., 1973). Preliminary research near Steamboat Springs indicates that excellent renovation can be attained if the proper design and management is provided (Wright-McLaughlin, October 1975). Consequently, even though the short growing season of the Steamboat area would limit the length of the land application season, climate considerations should not inhibit successful renovation of the wastewater if proper loadings are applied.

Wastewater Application: The proposed method of applying secondary effluent to the Meadow Industry lands would be by contour ditches. The application rate through these ditches would be approximately 29 inches per year. This rate is based on a net crop irrigation requirement of 22 inches per year, calculated by SCS methodology (Wright-McLaughlin Engineers, June 1977). It is based on local climatology, soil conditions and biological needs of reed canary grass. The total irrigation requirement (29 inches per year) is developed by assuming an irrigation efficiency of 75 percent, even though local practices often result in 50 percent efficiencies. This approach allows for a considerable margin of safety to be included in the plan.

The nitrogen loading from the proposed application should be about 82 pounds per acre in 1985 and 157 pounds per acre in 2010 (Wright-McLaughlin Engineers, June 1977). These rates are below recommended uptake rates for reed canary grass, which can vary between 226 and 359 pounds per acre. Consequently, the proposed system may be limited by nitrogen additions and may require a change to another grass species. Such a change could be facilitated by consultations with local SCS personnel.

The required lands for the proposed project have been reduced as a result of the June 1977 compromise. Current plans call for the use of 83 acres by 1985. Additional lands are available in case future operations are expanded. This approach allows for further study and evaluation, prior to committing all the summer-time effluent to the land.

The anticipated sludge volumes for the project are expected to be 1.2 million gallons per year in 1985 and 3.4 million gallons per year in 2010. Solids content of 1985 loads should be one percent and for the 2010 loads, two percent. Nitrogen content of the sludge is expected to be ten pounds per million gallons in 1985 and 15 pounds in 2010. Comparable effluent values are expected to be nine pounds per million gallons in both 1985 and 2010.

The required sludge treatment acreage is a small percentage of the required total acreage and is included in the previously-mentioned figures for the effluent. Sludge application rates are identical to effluent rates since water content is almost the same and nitrogen content is within acceptable application limits. Application methods are to be by surface spreading from contour ditches or by application from a tank truck. EPA prefers the former method or any injection variations of the latter, in order to minimize the generation of aerosols.

Since no tests have been run on the chemical quality of the existing sludge, it is difficult to comment on its compliance with recommended state and federal guidelines. Consequently, EPA recommends that this task be undertaken during the Step II process. Such a task is also necessary to satisfy state requirements, which make recommendations to counties on the acceptability of their sludge disposal operations. At this time, however, heavy metal concentrations in the sludge are expected to be well within the recommended maximum limits since there are no industrial processes in Steamboat Springs that would add such contaminents.

Site and Soils: Soil characteristics are one of the most important factors in determining the acceptability of a proposed land treatment site. Soils vary between predominantly clay soils with relatively low percolation rates to the sand-gravel types, with higher rates. The different rates are a result of the soil particle sizes and the spaces between them. Soils with the best combination of these factors are well-drained loams or sandy loams, for they would be capable of supporting good productivity in Steamboat Springs. Factors of additional importance would by pH, salinity, nutrient levels, and adsorption and fixation capabilities of inorganic ions (EPA, March 1975).

Factors that would be unfavorable for land treatment, according to R.L. Sands, T. Asano and A.H. Ferguson (1976), are listed below:

- slopes greater than 15% in forested areas and greater than 100% in grassland (under certain conditions there may be exceptions to these values depending on soil permeability and application).
- bedrock closer than three feet to the surface or extensive outcropping of bedrock (the EPA prefers five feet as a minimum).
- soils that swell more than 30%.
- infiltration rates that are either extremely low or SAR values that are high.
- water table closer than three feet to the surface during the spraying season (EPA recommends a minimum of five feet or adequate underdrains).
- highly saline soils or highly saline wastewater.
- excessive boron or copper in the wastewater.
- several barely acceptable characteristics listed above, which in combination indicate an unsuitable site.

All of these conditions are satisfied for the land treatment soils. However, other conditions like slow percolation and seasonally high water table do offer some localized constraints. Fortunately, the slow percolation rates have been accommodated by conservative application rates, which may even be marginal for satisfying the water requirements of the project crops. The water table of the work silt loam (2A,C) should be deeper than the recommended EPA depth (5 ft.) or the recommended Colorado depth (7 ft.). However, depths for the unnamed valley loams (12A,AW) could be as shallow as two feet during early summer and as deep as eight feet during winter. This variation exceeds the recommended standards and could promote localized pooling in the early summer. Such conditions should be avoided due to the probability of anerobic soil conditions and insect breeding. Avoidance can be accomplished by a reduction in application rates until soils are capable of taking more.

Other potential impacts on the soils will come from construction activities for the facilities and the collection system.. Major concerns are wetness, preservation of topsoil and prevention of erosion. The wetness is a likely event on 12A, 49A and AW soils. This possibility is most likely in the early summer when the water table can be only two feet beneath the surface. The preservation of topsoil and the prevention of erosion can be minimized by employing the mitigation measures outlined in Chapter VIII.

Besides hydraulic loading, other factors could effect the fertility of the soils under consideration. Trace elements do accumulate in soils and should be concentrated within the EPA's recommended levels for irrigation waters (March 1975). A comparison of these recommendations with the influent analysis in Table VI-1 suggests that trace elements should not be a problem. Other possible hazards include high salinities or high sodium adsorption ratios. They, too, are not expected to be a problem.

Treatment Efficiency: Extensive investigations have been conducted during the past several years in an effort to identify the treatment efficiencies that might be expected from a well designed land treatment system. This information is now well documented (Pound and Crites, 1973; EPA, March 1975; and Sank and Asano, 1976) and is summarized in Table VI-2. As can be seen from this table, the overall renovation expected from a properly managed land treatment system is excellent. Removal of BOD_5, SS, N, P, trace metals, viruses and bacteria are all excellent and such a system should have no difficulty meeting the 1983 design goals as developed by the design engineer.

TABLE VI-2

ESTIMATED PERCENTAGE RENOVATION EFFECTIVENESS OF LAND DISPOSAL TECHNIQUES

	Spray Irrigation	Overland Runoff	Rapid Infiltration Ponds
BOD	99	80	99
SS	99+	80	99
N	70-90	60-90	30-80
P	95-99	60-80	50-90
Trace metals	95-99	60-80	50-90
Organic toxicants	99	60-80	90
Viruses and bacteria	99+	90	99+
Cations	50-75	30-50	30-75
Anions	0-50	0-10	0-50

Effects of Nigrogen on Groundwater: Nitrogen contained in wastewater usually takes the form of organic nitrogen, ammonium-nitrogen, and nitrate-nitrogen although organic and ammonium-nitrogen are the principal forms applied to the land. Organic nitrogen is usually present in suspended form and is filtered and decomposed into ammonium; ammonium-nitrogen is either gasified or oxidized to the nitrate-nitrogen. Nitrate-nitrogen is not retained in the soil but is either utilized as a crop nutrient, leached to the groundwater, or released as a gas following denitrification. The nitrates released to the groundwater are a potential hazard since concentrations in excess of 45 mg/l can cause methemoglobinemia in small children. However, this potential hazard should be controlled with the proposed application rates and the natural removal rates. The proposed application rates for nitrogen vary between 82 and 157 pounds per acre per year, and these amounts should be taken up by the project crop, reed canary grass. Nonetheless, monitoring of groundwater will be undertaken to assure the program's success.

Effects of Trace Elements on Groundwater: Trace elements, heavy metals and refractory organics that are applied to soils are generally fixed in the soil particles and, in some cases, rendered nontoxic by bacteria. These constituents can be leached out of the soil, however, by excessive hydraulic loadings or by decreases in pH beyond 6.5. Thus, adequate system management will be a necessary requirement. Trace metals should not be a problem at the Steamboat Springs site due to preliminary influent analysis (Table VI-1).

Health Considerations: The health hazards associated with wastewater use are caused by pathogenic bacteria, viruses, protozoa, worms and fungi. None of these are regularly analyzed although the hazard from pathogenic bacteria is identified indirectly through the measurement of fecal coliforms or total coliforms. The fecal coliforms come almost entirely from the digestive tracts of humans and warm-blooded animals, while the total coliforms come from many other sources as well. The relationship between fecal coliforms and disease organisms has been substantiated for *Salmonella* (Geldreich, 1970; Geldreich and Bordner, 1971), where a high correlation was established between *Salmonella* and fecal coliforms when fecal coliform densities exceeded 200 per 100 ml. Since the wastewater is to have less than this amount before land application, its content of *Salmonella* should be low. However, its content of other disease organisms cannot be predicted but they, too, may be low.

Viruses are more difficult to measure than bacteria but are also a potential health hazard. Research by Plotkin and Katz (1967) indicated that only one virulent virus is sufficient to infect a person if it contains susceptible cells. Also, Berg (1971) suggested that waterborne viral diseases need not occur at the epidemic level to be of significance. Infection could occur and not produce overt symptoms, and the infected individual could serve as a viral source for others. Although no large-scale spread of viral diseases is known to have occurred by the water pathway, a small outbreak has been reported that infected 800 people (Mosley, 1967). Viral diseases that could be transmitted by water include poliomyelitis, gastroenteritis and diarrhea; however, the most convincing evidence exists for infectious hepatitis.

Since most of the pathogens found in wastewater are from human sources, exotic pathogens may be of concern. Such organisms could come from foreign countries, transmitted by visitors to Steamboat Springs. Due to the foregoing viral information, viruses would pose the greatest potential threat but they still would have to contact susceptible cells to be destructive. The transmission of these viruses to susceptible people would be negligible for all the alternatives, except for those people that directly handle the wastewater. They would be in contact with aerosols that could contain an exotic virus but the possibility of infection would be slight.

The transmission can occur through groundwater percolation, crop contamination, or aerosol conveyance. The danger from percolation should be minimal since practically all bacteria and viruses are removed during passage through the first several inches of soil (Pound and Crites, 1973; EPA, March, 1975; and Spyridakas and Welch, 1976). Hazards from the pathogenic contamination of crops are a lesser known quantity, however. Crops slated for direct human consumption should not be irrigated with wastewater during the last month before harvest, especially vegetables. Other crops such as corn do not readily pick up and pass along intestinal bacteria but they could pick up other pathogens. Problems for grazing animals include the ingestion of parasites that are incorporated into range plants. However, past records indicate that this should not be a problem.

The conveyance of pathogenic organisms via aerosols is a major concern, especially where spray irrigation is used. Aerosols are simply droplets of liquid that have become airborne, and aerosols from municipal wastewaters do contain viruses and bacteria. The public health implications of these have not been adequately examined in the field, but health hazards have been postulated. A lack of evidence for disease transmission by these aerosols divides professional opinion on the question.

For the Steamboat Springs proposals several conclusions can be made and actions can be taken to mitigate these potential problems. First, aerosols are not a problem in areas where flooding is used instead of spray irrigation. However, runoff should be monitored for possible contamination. Second, if a spray irrigation system is used, application areas should be fenced or posted and provided with a buffer zone around the spray field. Low-pressure nozzles, with application streams pointed downward, would also help to minimize the aerosol formation. During windy days, the spray application should be minimized or even stopped completely. For the Steamboat locale, the low relative humidity will also tend to minimize any problem.

Experience in other areas is valuable in gaining insight into possible problems at Steamboat Springs. Currently, wastewater is regularly being applied to a number of Colorado golf courses where public contact is intensive; no apparent ill effects have resulted from this practice (Dean, 1974). The AWPA study of 1973 failed to show any significant health problems associated with land application (Sullivan, R. H. et al., 1973).

Another consideration is that irrigation waters will be fully treated to secondary levels and disinfected via chlorination. Thus, the effluent quality at the point of application should be quite high and reduce the danger of health hazards. Also the uptake of heavy metals by plants should be slight since the wastewaters are not expected to contain high concentrations. This means that any subsequent transfer to wildlife should be slight. Increases in local insect populations should also be slight if application rates are adjusted to minimize surface pooling and runoff.

Surface Water Runoff: If the lowlands are irrigated by secondary effluent or liquid sludge, some treated waters would be diverted to the Yampa River. These waters would be collected by underdrains and discharged as a point source. This discharge will require a NPDES permit, to be administered by the Colorado Water Quality Division. If violations occur from such a system, application rates would have to be reduced and more area would have to be irrigated.

Geology

If inplant processes are chosen for Steamboat Springs, or if no action is taken, the impact on the area's geology should be negligible. If the land treatment alternatives are chosen, though, impact could accrue to the water in the alluvium or the sedimentary layers. These possibilities are discussed in the evaluation of land treatment. If a 100-year flood occurs, then a geological hazard could impact the project facilities.

The 100-year flood plain is shown in Study Map 1 and indicates that the existing facilities would be flooded and the sewage lagoons surrounded. Such an occurrence would disrupt treatment and increase the polluting nature of the discharge. The river would be flowing at about 8,000 cfs, however, so its dissipating capabilities would be considerable. Perhaps a more serious impact would be the water damage done to the facilities. This potential damage can be minimized with the proper design and it is recommended that this be done. If the Midway Site is chosen, its location would be placed outside of the 100-year floodplain so that waterproofing contingencies could be eliminated from its development.

Soils

The soils of the project area would receive significant impact only if one of the land treatment alternatives is chosen. They should be enriched by the nutrients and trace elements in the wastewaters. However, yearly samples should be taken and analyzed so that the changing character of the soils can be observed.

Biology

The principal impacts on the area's biological systems are on the Yampa River if Alternatives I, III and V are chosen and on the cultivated fields if Alternatives II and IV are chosen. The former impacts are fully discussed in the evaluation on water quality and the latter ones are discussed in the evaluation on land treatment. None of Colorado's threatened or endangered species should be directly effected by the four action alternatives, although the habitat of Colorado Squawfish and Bonytail Chub would be deteriorated by the no-action alternative. The survival of these fish is endangered and the no-action alternative would allow discharges of ammonia and residual chlorine to increase in their downstream waters. These discharges would deteriorate the quality of their habitat. Furthermore, development spawned by the action alternatives could eventually impact the greater sandhill crane due to human encroachment on their habitat.

Air Quality

The study area currently violates state and national ambient air quality standards for total suspended particulate (TSP). The principal cause has not been identified but is probably road dust from the heavy traffic volumes along Lincoln Avenue (U.S. 40), fireplace smoke, and fugitive dust common to agriculture areas. Future growth and development, as facilitated by an enlarged sewage treatment system, will aggravate this situation particularly through increased traffic. However, the majority of the present traffic volume is through-traffic, independent of local growth. In addition, a proposed U.S. 40 by-pass will probably result in lower ambient concentrations of TSP by trip diversions. Street washing or other programs to control non-point discharges will undoubtedly improve this situation as well by control of street dirt.

One advantage of the Midway Site is that it offers a land buffer against noise and odor problems. Since a pressurized spraying system is not being proposed for either effluent or sludge, aerosol hazard potential is eliminated. In addition, the plant will be located in a remote area, thus odor complaints under upset conditions are not anticipated.

Land Use

In this section key issues are discussed regarding site and treatment alternatives as they relate to growth and land use. The "no-action" alternative is considered first, followed by discussions of the area's land use goals and how they would be affected by the Midway and existing sites, and by land treatment.

Alternatives

It seems quite unlikely that no action can be taken. Steamboat Springs sewer facilities are already in violation of water quality standards. More growth is expected and nearly all local residents interviewed felt that something should be done. Were federal monies not available, however, the city would probably have difficulty in finding the revenues to build even a minimally acceptable facility. The results could be rather negative, as follows:

New point sources of pollution along the Yampa River are currently prohibited because wasteload allocations are filled. New construction must, therefore, tie in with an already existing sewage system. If the city's facilities, the largest existing system in the area, were to be left unimproved, the State Health Department could order a halt to all new construction. This was the case in Montrose, where state officials ordered a local building permit moratorium under authority granted by the State Water Quality Control Act of 1973.

Some people, especially the young, already pack more roommates into a house than zoning allows. In addition, there is an urgent need for low and middle income housing. Therefore a moratorium, were it extended for any length of time could intensify the already present housing and economic problems.

In all probability, a moratorium would also create such political pressure for building new sewage facilities that the federal government would eventually have to contribute funding or an extremely large bond indebtedness would have to be assumed by local residents, the latter being vulnerable to the bond sales market (See Chapter III).

Although the County and the City of Steamboat Springs have not yet adopted a comprehansive plan, land use and zoning maps and the goals formally stated by the Citizen's Advisory Committee (CAC) for the regional sewage authority provide a basis for determining desired long-term land use. The latter, combined with interviews of local residents and a look at existing trends, reveals a fairly clear pattern of what future land use should be (Study Map 2).

A prime goal is preservation of agricultural land. The water-oriented goals and policies of the Citizen's Advisory Committee state that: "All alternatives investigated must enhance the agricultural industry of Routt County and the SSRSA study area to provide a diverse economy for the stability of the region." As many interviewees noted, since the study area is overzoned, future population can easily be contained within already platted areas, making it unnecessary to rezone agricultural land for some other use. EPA's evaluation pays particular attention to this goal, since more than anything else, the pressure to convert agricultural property to other purposes has caused serious growth and socio-economic problems in the past.

No appreciable difference exists between plant site alternatives as far as their effect on land extending from the southwest edge of the study area north along Highway 40, encompassing the Mt. Werner, Fish Creek and Tree Haus areas. According to the unofficial 1995 land use plan, much of the future development should take place in this section, filling in the region between the Steamboat ski area and the town. Both Midway and the existing site will allow gravity flow from this area, facilitating the development that is planned. The use of the present Mt. Werner lagoons for flow leveling will provide an advantage by compensating for seasonal flow variations that result from extensive tourist accommodations in this area.

The original townsite of Steamboat Springs and West Steamboat is another major area slated for growth, according to the 1995 land use maps. Again, there is little distinction that can be drawn between plant sites as far as their impact on this area.

The area along both sides of the Elk River Road, from its intersection with U.S. 40 to the airport, (County 129), is mostly open land, but its location between the airport and town makes for a natural growth zone, especially for industry and commerce. Both plant sites would receive gravity flow from this area.

Land north of the airport is primarily open and is intended to remain that way according to Gathers. The River and Deer Mountain subdivisions are the only residental developments in this area. These approved satellite subdivisions are partially built out with future growth thwarted by soils conditions which prevent the use of individual septic systems. If interceptor sewer lines are extended to this area, sewage will have to be pumped uphill as far as the airport, regardless of which plant site is chosen. Although pumping would be a discouragement to growth in this area, a modern sewer system could facilitate development which is contrary to the draft comprehensive plan.

The broad expanse of land west of the Elk River Road/U.S. 40 Junction, extending north and south of the Yampa, is the principal area of land use concern. As shown in Study Map 2, this area contains both the proposed plant sites and land treatment area. The Riverside, Sleepy Bear, KOA and Steamboat II residential areas and the Selbe and Hogue farms are located along the north side of the river, while south of the river, land use is devoted to both irrigated and non-irrigated cropland as shown in Study Map 2. The concern is for the open farmland extending from the present city lagoons west to the Midway Site and beyond. A subjective argument exists regarding the role wastewater facilities play in influencing future land use. Will the selected plant site encourage, facilitate, or discourage growth in the remaining area slated to continue as agricultural? Specifically, there is concern that the Midway Site would encourage development because gravity flow could be utilized in most of this area. Pumping, it is argued, with its extra costs, would be necessary if the present site is maintained, thus providing a growth deterrent.

On the other hand, north of the highway between Steamboat II and the present site there is only a finite amount of property that could be readily developed, namely the area in the immediate vicinity of Steamboat II, which would require pumping even to Midway, and another parcel across the road from Riverside. The remaining open land north of the Yampa is mostly on top of a mesa and is not likely to be developed due to construction costs and probable planning agency opposition. As for the area to the south of the Yampa, there is such strong community sentiment to maintain this land as agricultural that the selection of a plant site will not by itself provide an inducement to urban growth. Those interviewed, including ranchers, public officials, planning commission members, and the citizenry-at-large expressed nearly unanimous support for keeping this area as is. Barring unforeseen events, this land will be incorporated into the final Comprehensive Plan with its present agricultural designation.

The only clear conflict with apparent community goals and sound land use principals in this area is a proposed trailer park as indicated in Study Map 2. This zoned use would create another satellite development around Steamboat, few of which have been successful. The proposed "Meadow" midway site would remove the intended trailer park use, thus keeping the majority of this parcel in productive agricultural use and compatible with the surrounding area. The question remains whether the existence of the plant and connecting interceptor south of the river will create pressure for development in this area. The proposed

County Comprehensive Plan recommende agricultural use which does not preserve this use even if adoped. A comprehensive plan is a recommendation, and as such does not limit or dictate land uses. The ultimate control lies within zoning regulations as adopted and modified by the county commissioners.

EPA attorneys, at the time of this final EIS, are working with city and county officials to create a legal restriction on new taps along the proposed interceptors. A grant condition will be imposed by EPA on the SSRSA which will require that Steamboat Springs take all legal means possible such that taps on the new interceptor be limited to existing incorporated sanitation districts and existing residences including Sleepy Bear and KOA. The grant condition will be in effect for a period of 10 years or until Phase II expansion. The purpose of this grant restriction is to make every possible effort from the federal level to assure compatible land uses consistent with local desires. The interceptor tap restriction was originally proposed by Dr. John Utterback, Chairman of the Routt County Commissioners. City, SSRSA and Routt County concurrence is anticipated with this plan.

The other alternatives keep the main plant at the present Steamboat Springs site. The existing site is in a section that could very well become densely populated. The land surrounding the present lagoons is slated for high intensity industrial development to the north and east on the 1995 plan and for medium density residential just to the west. A trailer park and housing development are already in operation on nearby property. The history of sewer systems in populated areas is not very good. People have an almost instinctive reaction against sewage, and there are practical fears of noise and odor. Interviews with residents of the nearby trailer park revealed no complaints about the present facilities, but one cannot be sure that future residents will feel the same, or that expanded facilities will not make a difference. Eventually, complaints from residents and businesses in the neighborhood could force the city to consider a new location.

In sum, it appears that there is little appreciable difference between the sites as far as their effect on growth patterns is concerned. For that reason, the existing site may be desirable for the short term in order to fully utilize present facilities, but over the long run the Midway Site is preferable since it provides adequate buffer away from nearby residences, thus consistent with sound land use principals.

Land use criteria must also be considered when land treatment is under consideration. Application of disinfected secondary effluent to a parcel of land requires the long-term commitment of that land for treatment purposes. The area proposed for summertime land treatment is shown in Figure 14 and is the same area that public officials, study area residents and property owners agree should remain agricultural. Simultaneously, summertime land treatment, by keeping the

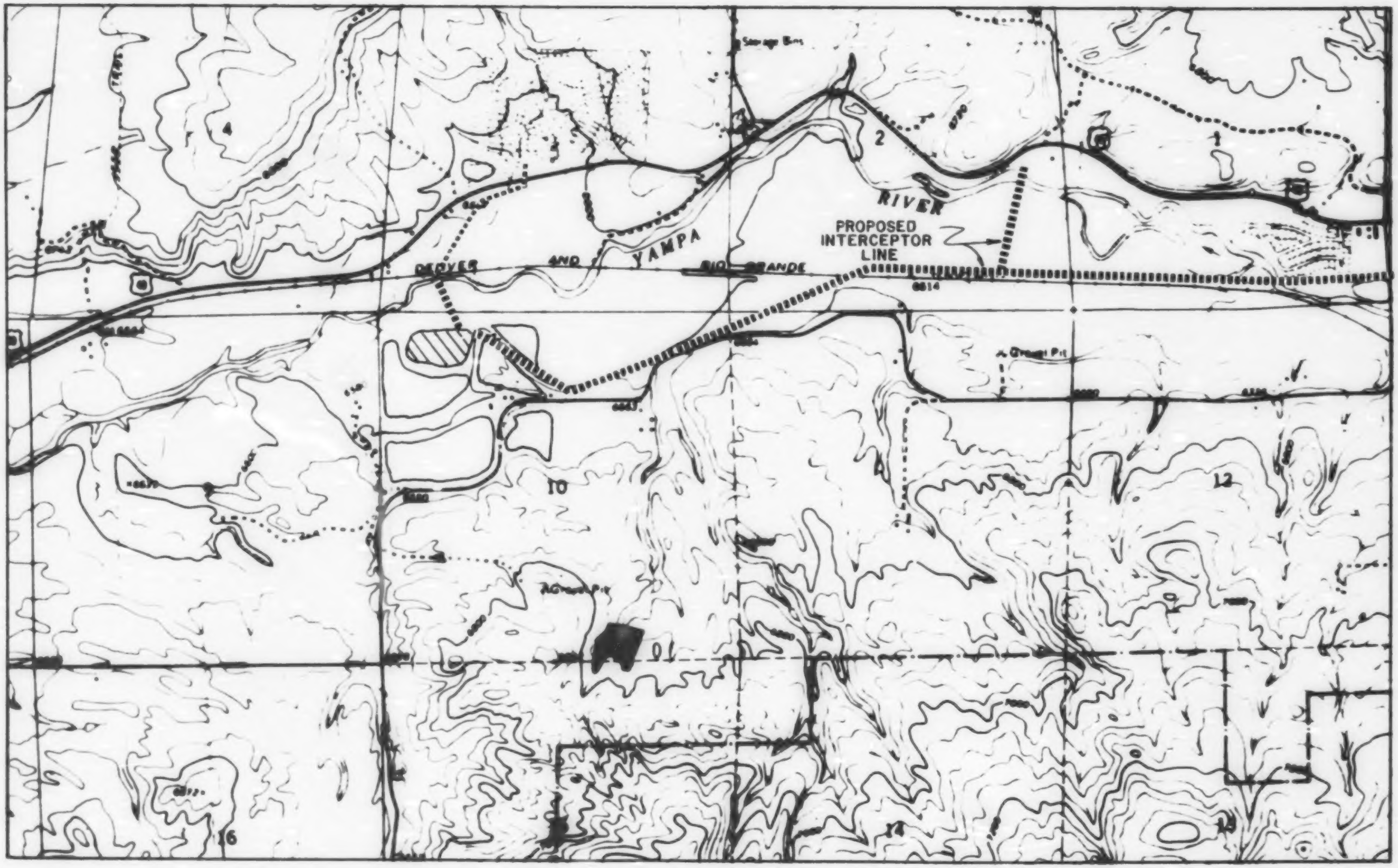

FIGURE 14
LAND TREATMENT SITES
STEAMBOAT SPRINGS REGIONAL
WASTEWATER SYSTEM

direct discharge in winter, would, through the technology employed, link the waste-load allocation to a design population. Since the waste-load allocation is in pounds per day, the waste-load allocation will continue to serve as a growth constraint and a growth management tool. Therefore, EPA encourages this mode of tertiary treatment for the Steamboat Springs area.

Costs

In the draft EIS cost estimates were summarized as prepared by Wright-McLaughlin. Since that time extensive effort has been made in producing accurate cost estimates for the two alternatives under active consideration; extended aeration and advanced biological treatment at the City lagoon site, and extended aeration and mixed advanced wastewater treatment (EA-MAWT) at the Midway Site. Table VI-3 summarizes capital, operation and maintenance costs according to a present worth comparison technique. This approach takes into account the time effect on money and indicates an estimated $343,260 savings with the Midway EA-MAWT alternative over the twenty year planning period.

The Steamboat Springs City Council on June 22, 1977 approved a combined plan which includes the Midway Site and both technologies of EA-MAWT and EA-ABT as discussed in the recommended action chapter. The total estimated costs of this selected action are compared in Table VI-4. It is estimated that the combined process will increase overall costs by approximately $138,500. This amount represents only a 1.9 percent increase over the Midway EA-MAWT alternative. Given limitations of engineering costs estimates, it can be said that the City's selected plan is essentially identical in cost to the Midway EA-MAWT alternative. In comparison to all other alternatives considered, it appears that the City's choice is the most cost effective means to achieve agency water quality standards while at the same time meeting capacity needs.

TABLE VI-3

COST EFFECTIVE COMPARISON
MAIN ALTERNATIVES

	Steamboat	EA-ABT	Midway	EA-MAWT
Phase I:				
Collection System	1,122,450		1,506,100	
Treatment System	3,647,260		2,661,400	
Total Capital Costs	$4,769,710		$4,167,500	
Present Worth Phase I: (.9401 factor)		4,484,000		3,917,850
Phase II:				
Total Capital (Treatment) Costs	575,450		1,905,160	
Present Worth Phase II: (.6099 factor)		350,960		1,161,960
Total Capital Present Worth		4,834,960		5,079,810
Operation and Maintenance Present Worth (20 years)		2,813,710		2,225,600
TOTAL PRESENT WORTH		$7,648,670		$7,305,410
AVERAGE ANNUAL COSTS (20 years - .0899 factor)		$ 687,620		$ 656,760

TABLE VI-4

COST EFFECTIVE COMPARISON
SELECTED PLAN

	Midway Site Extended Aeration With ABT and M/AWT	
Phase I:		
Collection System	1,506,100	
Treatment System	2,686,200	
Total Capital Costs	4,192,300	
Present Worth Phase I:		3,941,200
Phase II:		
Total Capital Costs	1,914,500	
Present Worth Phase II:		1,167,600
Total Present Worth of Capital Costs		5,108,800
Total Operation and Maintenance Present Worth (20 years)		2,400,000
TOTAL PRESENT WORTH		$7,443,100
AVERAGE ANNUAL COSTS		$ 669,130

VII. Recommended Action

It is EPA policy that the selection of the engineering alternative be done at the local governmental level providing engineering economic and environmental criteria are met. This selection was made on June 22, 1977 by the City Council and Board of County Commissioners and it was supported by the design engineer, the environmental consultant and the EPA. Based on this concurrance, the final design is being developed and several unresolved issues are being addressed.

The alternative chosen is the one designated as Alternative IV in this report. It provides tertiary treatment by in-plant processes during the non-irrigation season and by a combination of in-plant processes (60%) and land treatment (40%) during the irrigation season. The existing Steamboat Springs plant will be used for secondary treatment until retirement in 1985 (approx.). The collection system would use the Mt. Werner lagoon for flow leveling and would divert most of the wastewater to the Steamboat Springs plant. From here the treated effluent would be directed to the Midway plant for final treatment and processing. The installation of the collection system would be funded by the districts involved, except for improvements in I/I and the installation of outfalls. It would involve the improvement or replacement of several thousand feet of existing outfalls in the Mt. Werner and Steamboat Springs districts, plus the installation of a new outfall that would connect Steamboat Springs and the Meadow Industries site. This latter line would also receive wastewater from KOA, Sleepy Bear and Steamboat II.

The major components of the new plant would include a pre-treatment facility, two extended aeration basins, two clarifiers, dual media filters, disinfection facilities, dechlorination facilities, sludge facilities and an aerated polishing pond. The extended aeration basins would provide for BOD removal and some nitrification (25 to 50 percent). Additional BOD would be removed by the dual media filter, which would also remove suspended solids. The aerated pond would then provide additional treatment and flow leveling.

During the irrigation season, 40 percent of the incoming wastewater would be treated and disinfected before being applied to the land. The in-plant treatment would consist of primary, secondary and tertiary treatment (nitrification). The application to the land would be by surface spreading, applied to the Meadow Industry lands. The application rate would be about 29 inches per year and it would supply about 82 pounds per acre of nitrogen in 1985 and 157 in 2010. The hydraulic loading represents a conservative approach that takes many environmental factors into account. The nitrogen levels reflect the input of summertime effluent and year-round sludge and they are well within acceptable uptake capabilities for the project crop, reed canary grass. The effluent would be applied by existing contour ditches and the sludge, by a flexible hose or tank truck. If a tank truck is employed, EPA prefers injection to spraying.

The construction phasing is planned in two stages, one commencing in 1978, the other in 1985. The first phase would provide for the installation of all equipment previously mentioned. The second phase would provide for two more aerators, two additional clarifiers and a second pond. Their completion and successful operation would signal the retirement of the existing plant at Steamboat Springs. Phase II operation involves higher annual power costs due to increased flows and energy-consuming aerators that will replace the lagoons at the Steamboat Springs site.

VIII. Mitigation Measures

The proposed mitigation measures are discussed in the text that follows. They are designed to minimize the projected impacts that are delineated in Chapter VI, Evaluation of the Alternatives. They are discussed under the headings of water quantity, water quality, soils, biology, air quality, history and archaeology, and socio-economics.

Water Quantity

The most significant water quantity problem facing the SSRSA is the excessive inflow/infiltration (I/I) within their collection systems. This factor often accounts for up to 85 percent of the total flow at the Steamboat Springs plant. To minimize this action the Public Works Department of Steamboat Springs is initiating a program to replace some of the lines in the older part of the city and place them below the frost line. This activity should reduce winter I/I by over 20 percent.

Additional measures are proposed by Wright-McLaughlin Engineers so that year-round I/I can be reduced by approximately 50 percent. They would involve replacing some of the older lines in Steamboat Springs with the new ones paralleling the older ones. Such action would allow the older lines to continue to collect groundwaters and discharge it to the Yampa River drainage. If this technique is employed, the discharge should be integrated into plans to control urban runoff. It could require some settling to remove suspended solids or possibly some other form of treatment. Tests on the quality of this water would be necessary to determine the necessary control or treatment. The discharge, itself, would require a permit from the Water Quality Control Division of the Colorado Health Department.

After proper controls have been placed on discharging some of the I/I, it should be considered for recycling purposes. This possibility would depend on its water quality and the needs of potential users.

Other means of controlling I/I have been proposed for the Mt. Werner collection system, which would consist of replacing existing pipe, grouting it and providing liners. These proposals, along with the others, are considered cost effective by Wright-McLaughlin Engineers when compared with facilities expansions. This proposal is presently being implemented and the future facilities have been designed accordingly.

Water Quality

The water quality of the Yampa River can be maintained and improved by implementing the recommended action, by controlling and treating urban and agricultural runoff, and by stabilizing the river banks. All of these factors are necessary if the 1983 goal of the Water Pollution Control Act is to be achieved. An important corollary to the recommended action is sound and alert management of the proposed system. This factor would be especially important during the irrigation season when application rates must be properly adjusted to account for aerobic soil conditions and proper treatment before discharge into the Yampa River. This latter consideration will require periodic monitoring of the discharge to see if it complies with permit requirements. Another consideration would be the quality of the receiving waters in the ground. Again, periodic monitoring will enable management to regularly assess this parameter and take corrective action if necessary.

During the non-irrigation period it would be necessary to regularly monitor the quality of the effluent and the sludge. Parameters of concern include ammonia, residual chlorine, BOD and suspended solids; the effluent concentrations must conform to a discharge permit. The constituents in the sludge will affect the application rate so their quality will also be monitored. Such information would be helpful in finding both the optimum application rate or the optimum application method.

Control of agricultural and urban runoff can be achieved in several ways. The following three areas are considered most important by Wright-McLaughlin Engineers (June, 1977):

- Implementation of institutional measures to control runoff and prevent practices that cause erosion and other sources of non-point pollution.
- Implementation of correction measures that will mitigate erosion and pollution, such as steep roadside cuts and unmanaged trash and garbage areas.
- Implementation of runoff control measures for heavily developed areas, which include good street sweeping and structural measures to contain and partially treat shock loading.

The institutional measures of this program would include regulations relating to floodplains, detention ponding and erosion control. The floodplain regulation would create a riparian zone that would restrict residential and industrial development and would promote open space. It also should encourage a non-agricultural zone along the river banks to promote re-establishment of natural vegetation. A model for such a program already has been prepared by the Colorado Water Conservation Board and could be applied to Steamboat Springs.

A detention pond regulation would involve the formation of a municipal drainage and flood control agency. It would develop operating funds by charging property owners, according to the runoff from their property that is created in excess of natural flows. Credits could be provided to owners who reduced their runoff through the creation of detention areas on roofs, parking lots or grassy areas. If these incentives could not generate sufficient voluntary reductions, then associated operating funds would be available to implement structural controls for the entire city.

Erosion control regulations would focus on a variety of areas related to earth-moving activities, construction and urbanization of open land. They would be designed to prevent water pollution from sediment, fertilizer, pesticides and other substances that are potentially harmful to humans or aquatic life. Sensitive areas to be regulated would include:

- Earth-moving activities, which should be limited in their areal extent.
- Surface water diversions, which should be required around active construction areas.
- Velocity control of surface diversions, which should be encouraged to minimize erosion.
- Revegetation, which should be implemented during the first growing season after ceasation of construction.
- Interim revegetation, which may be advisable during projects of lengthy duration.
- Collection of runoff in sedimentation basins, which should occur prior to joining local rivers and streams. Diversion to treatment facilities should be implemented only if the unnatural runoff is considered serious.
- Dumping of oil, grease, antifreeze, pesticides and general refuse, which is already controlled to some extent by existing state regulations.

After some of these institutional measures are implemented, additional correction measures could be undertaken to control runoff from road systems and ski areas. For example, all disturbed areas along roadways should be revegetated, according to local SCS practices. When roadside slopes exceed a gradient of 3:1, structural measures should be implemented instead of revegetation. When natural drainage patterns intersect a road, they should be allowed to pass through conduits, since unnatural diversions often foster excess erosion and sedimentation.

The construction of lift facilities and ski slopes should be planned in such a way to prohibit the need for significant fall construction. The construction areas should be left free of construction debris and other waste material. As an area is developed, a plan should be clearly made and approved by the Forest Service to show how runoff from recent construction activities will be managed so that flows laden with sediment will not discharge directly to streams. Suggested measures are detention ponds below recently constructed lift facilities and discharge of runoff into heavily wooden areas via a spreader pipe so that the water is filtered by the vegetation and soil layers in that forest. Also, the ski slopes should be left with as much cover as possible, and in general, not cleared by bulldozers, etc. If areas are completely cleared, significant control measures should be taken to establish a healthy vegetation cover.

Once institutional regulations are developed and various correctional devices are employed, runoff control measures should also be employed at the highly urbanized areas of Steamboat Springs and Mt. Werner Village. A first step would involve the implementation of a street cleaning program, which has already developed for Steamboat Springs. Another action could involve the collection of runoff from the highly urbanized areas and its routing to sedimentation ponds. The collection system for this program would be the most expensive, while the sedimentation ponds would be the least expensive.

Wright-McLaughlin Engineers estimates that it would cost about $1,575,000 for such a system, not considering land acquisition costs and contingencies. This estimate is based on $1,425,000 of collection costs for 280 acres in the "Old Town" region of Steamboat Springs. The pond costs of $150,000 are based on a seven acre-feet pond in the Mt. Werner/Fish Creek area and a nine acre-feet pond in the Steamboat area. Both of these ponds would be designed to contain runoff from all the mean annual rainfall so that shock loading could be detained and released slowly.

If this system could be implemented in the project area, a major step would be taken to achieve the national water quality goals of 1983. If further advances are deemed desirable, urban runoff from the collection system could be routed to the regional sewage plant during off-peak hours. Implementation of this program would involve the purchase of automatic metering devices, costing around $60,000, plus a slight increase in O & M costs to operate the system. EPA believes that Steamboat Springs needs to be more aggressive in analyzing and eventually instituting these non-point programs. To date their activities have been limited to a street cleaning program and controls on constructed related erosion. Of course the structural alternatives considered above would be costly for the city to implement and federal funds are not currently available for this purpose.

Soils

The soils of the project area will be impacted due to irrigation with effluent and sludge, construction of new facilities and installation of new collectors. The irrigation with effluent and sludge should impart beneficial effects if distribution rates are controlled. Yet the construction of new facilities and the installation of new collectors should provide local conditions for erosion. Consequently, these activities should be performed during drier periods of the year to mitigate against loss of top soils. Plans also should be made to collect seepage waters and prevent them from entering the Yampa River via surface flow. If natural surface runoff does enter the project sites, it should be diverted.

The topsoils of the project sites will be valuable during revegetation phases of the project and should be stock-piled. Along the right of way for the interceptor topsoil can be replaced immediately on the previously covered trench. Furthermore, if construction persists longer than one summer, these soils should be protected by a cover crop. Acceptable cover crops include oats or rye grass (Lolius sp.). Note that the latter species is not cereal rye, which is deemed undesirable by some local ranchers.

Once construction activities have been completed, plans should be made to prepare the site for revegetation. Stock-piled top soils should be re-distributed over disturbed areas, layered according to their pre-construction thicknesses. Final grading should allow for proper drainage and should provide for safe operation of farm equipment (< 3:1 slopes). After final grading has been completed, tests should be conducted to analyze the soils' nutrient composition. Such Such tests may be conducted at the CSU Extension Service in Fort Collins, Colorado, while sampling bags may be obtained from the local SCS office.

If nutrient deficiencies are identified, the CSU lab will recommend nutrients to be applied and their application rate. When fertilizer is applied, it should be mixed to a depth of four inches, using a disc or other suitable device. This activity should continue until a firm, uniformly-fine seedbed is prepared. Once disking has been completed, harrowing should be undertaken to further break up the clumps. If fertilizer is not applied to certain portions of the site, disking and harrowing should be undertaken anyway, to prepare these areas for planting. When any of these operations are conducted on sloping land, the equipment should be driven along the general contours.

The seeding mixture should be comprised of 50 percent Timothy and 50 percent smooth brome, variety Manchar (Tom Pick, SCS, personal communication). These grasses already occur along valley bottom lands and terraces and they are hearty perennials that form good sod. If a legume is added to the mixture, Alsike clover should be used since it is less likely to cause bloating in livestock.

The recommended seeding method is drilling since it maximizes the potential for establishment. Seeding rates for this method should be three-quarters of a pound of Timothy and six and one-half pounds of smooth brome for each acre seeded. If Alsike clover is added to the mixture, less than one pound per acre would be sufficient. If broadcast methods are used instead of drilling, all seeding rates should be doubled. If seed stocks are less than 100 percent pure, seeding rates should be increased accordingly. Proper implementation of this program is designed to produce 40 live seedlings per square foot.

The best time for seeding would be fall, between late September and October. The second choice would be early spring with small amounts of snow still on the ground. Irrigation should be used only if fertilizer is used or if it can be accomplished by using low flow rates over short periods of time. High flow rates could drown or wash away seedlings if it persisted in its intensity.

Mulching should be employed only on slopes that possess a gradient greater than 4:1. Mulch materials should be unweathered, unchopped hay or small grain straw, preferably wheat. Application rates should vary between one and one-half to two tons per acre, or 70 to 90 pounds per thousand square feet. The selected mulch should be spread uniformly so that approximately 75 percent of the soil surface is covered. Once this material is in place, anchoring devices should be employed to minimize losses from wind and water action. Acceptable anchoring devices include peg and twine, nettings, tillage, mulch anchoring tools and pick chains.

Routine inspections should be made of vegetated areas. If an area does not respond adequately, re-seeding should be attempted, using one-half of the original seeding rates. If over 60 percent of an area is damaged or if it has not properly vegetated, re-seeding should be attempted with all original rates and procedures. If other contingencies are encountered, consult with local SCS representatives.

Therefore, EPA will condition the Step II grant to SSRSA such that the construction includes a suitable revegetation plan developed under the above guidelines.

Biology

The biological systems most effected by the project are the Yampa River, proposed irrigation and sludge disposal sites, and the construction site. All of these systems have been discussed in the previous two sections on water quality and soils. Impacts on these systems are a direct result of the proposed project. Yet secondary impacts may occur also as a result of increased human activity brought about by the project. This activity could impact the greater sandhill crane, a state endangered bird species. Studies of this bird have concluded that a one-quarter of a mile buffer zone should be provided around active nests. Additional protection can be afforded by avoiding development near their spring dancing grounds and their fall staging grounds. Sandhill cranes have been observed in the project area along the Yampa River but neither their dancing or staging grounds are in this vicinity.

Air Quality

The most significant problem with the quality of the project's air is the generation of fugitive dust from automobiles and trucks. This problem can be mitigated by a more effective street cleaning program, which is proposed to reduce the pollution loads from urban runoff.

History and Archaeology

EPA recognizes that the limited information currently available in archaeology in the area is not adequate to consider right of way selection or the exact site of the plant as well as possibly recover any sites of archeological significance. Therefore a supplemental report on archeologically significant sites is currently being prepared. Unfortunately, this report will not be completed in time to print as part of this final EIS. Copies of the report will be available by mid September 1977 and sent to interested parties upon request. The State Historical Preservation Officer will be contacted following his review of this report for his recommendation on mitigating measures for archaeological sites.

If archaeological artifacts are discovered during construction or plowing activities, these activities will be stopped. A qualified archaeologist should then be summoned to investigate the site. If the findings are significant, accomodations should be made to allow proper excavation and assessment. However, these accommodations should be done in such a manner that construction delays are minimized. EPA will also condition the Step II grant to SSRSA that construction activity include consideration for the results of this field survey of archaeological sites.

Socio-Economics

The main socio-economic factor to be mitigated is the poor financial conditions of the districts. This condition is discussed in Chapter III and it must be rectified before construction funds can be released. The EPA must be assured that the member districts can produce their 25 percent of the total projected cost.

Interceptor and Force Main Crossings of the Yampa River

The proposed interceptor will cross the Yampa River west of the present Steamboat lagoons. In addition, two force main systems for KOA, Sleepy Bear and Steamboat II will cross the river (See Figure 4). This construction activity requires a permit issued by the U.S. Army Corp of Engineers Sacramento District under section 404 of the Federal Water Pollution Control Act. This 404 permit is issued with EPA concurrence that such construction will comply with Colorado State Water Quality Standards and minimize adverse affects on wildlife habitat. The details of construction design will be accomplished during Step II. At this time it is anticipated such construction will be cut and fill along the river bottom. In order to minimize the expected adverse affect of stream siltation during construction which could harm fish spawning, EPA will condition the Step II grant to SSRSA to include compliance with 404 permit conditions including but not limited to the following:

1) Consultation with U.S. Fish and Wildlife Service and the Colorado Division of Wildlife such that the construction period avoids fish spawning or fish movement for spawning.

2) Placement of non-toxic fill material as bedding material or as cover material. (EPA prefers the original cover material be replaced).

3) Heavy equipment use in the stream be minimized either by using a dragline or backhoe in order to reduce sedimentation during construction.

4) Minimize disturbance of the entry trenches along the banks by using dragline or backhoe equipment.

Rather that specifying a certain period suitable to meet the first criteria at this time, these agencies should be contacted after permit application to best determine the least conflicting periods during the year of construction. The SSRSA must apply for the 404 permit to the Corp of Engineers at least 180 days prior to anticipated construction.

Groundwater Control During Construction

The proposed interceptor line will require trenching in areas of shallow groundwater necessitating dewatering of the trench. If such water is discharged to the Yampa River or to an irrigation ditch in the area, this activity would require a permit from the Colorado Dept. of Health issued under the National Pollution Discharge Elimination System (NPDES). Such permits usually require limitations on suspended solids and free of oil and grease. No other contaminates are expected in this water. EPA prefers that this limited amount of water be applied as irrigation water to the fields in the area if the land owner agrees to such a procedure. If the construction and dewatering occur during a wet period, this water may be a nuisance to hay production. Under these conditions, the water should be pumped to the higher (and drier) upper terraces with owner consent or after passing through a settling pond and meeting the NPDES permit conditions, discharged to the river. Therefore EPA will condition the Step II grant to SSRSA such that they comply with any NPDES permit issued and further that the contractor shall prepare a plan for wasting this water which emphasizes its use for irrigation.

Energy Conservation

EPA wishes to promote engineering designs that conserve the nation's limited energy resources. There are two basic ways to accomplish this for the proposed facility:

1) Encourage insulation and design for the enclosed portions of the plant that reduce space heating requirements.

2) Encourage high efficiency and/or phasing of the pumps needed in the system.

Insulation requirements currently established by the Federal Housing Authority include minimum standards of R-30 in ceilings and R-19 in outside walls. Double windows and proper sealing are logical components of a well insulated building. Passive design can also aid in reducing building thermal space heating demand. Such design includes southern exposure for windows and doors while on northern exposures such openings are reduced or eliminated. Solar heating is not likely to be cost effective given the low space heating demand of the proposed structures (these facilities do not require the same temperatures or night time heating of residential buildings for example). Nevertheless EPA encourages the SSRSA to investigate the need for solar heating during Step II design.

Pumping efficiency depends both on the rated efficiency of the pump and the percent of load on the pump. Electric motor efficiencies currently range between 88% and 93%. More efficient motors usually have a higher initial cost. Pump systems consume less total energy when the hydraulic load is near the capacity of the pump. The latter presents a problem to the design engineer in terms of energy conservation since selecting a pump initially close to current hydraulic capacity does not allow for increased flows due to growth. In some cases it is possible to add pumps or phase in new pumps rather than operate a larger pump under low loads until growth occurs.

Therefore EPA will condition the Step II grant to SSRSA such that the design of the new facility shall comply with the minimum insulation requirements established by FHA for residential housing. In addition, the design shall consider the cost effectiveness of using high efficiency electric motors, pump phasing to allow for maximum pump loads, and a solar heating system.

Growth Restrictions

In accordance with the expressed wishes of the Routt County Commissioners, an outfall tap restriction will be instituted prior to issuance of Step 3 grant funds. This will limit access to the regional plant interceptor line and prevent growth inducement inconsistent with community goals.

This grant condition shall read as follows:

> "The secondary effluent transmission line or outfall line between the existing lagoon system and the Midway site shall be restricted so as to prevent future connections within the present unincorporated areas of Routt County and areas outside of the present boundaries of the existing sanitation districts as of the date of this grant. Existing residences occupied prior to the date of this grant are exempt from this provision. The above restriction shall apply for a period of ten years or until Phase II expansion is undertaken, whichever occurs first. The City of Steamboat Springs shall take all legal means available to implement this restriction."

IX. Unavoidable Adverse Effects

After the impacts of the recommended action are mitigated, the remaining impacts are considered unavoidable. Most of these impacts are on the area's water quality and they are considered minor. They include increases in background levels of BOD, nitrogen and residual chlorines in the Yampa River. The BOD represents organic material that can be consumed by aquatic insects or that can be decomposed into nutrients. These nutrients could produce a fertilizing effect on the plants of the Yampa River, thus improving its productivity. The nitrogen compounds would include ammonia and nitrates, and they could also provide a fertilizing effect on the Yampa River. Both BOD and ammonia could reduce the river's oxygen concentrations although this is expected to be slight.

Other unavoidable impacts include the loss of approximately 20 acres of productive cropland due to the construction of the new plant. Impacts associated with the land application program are expected to be beneficial, and its potential adverse impacts should be avoidable through proper application rates and proper management.

X. Short-Term Uses and Long-Term Productivity

The short-term uses of the study area are centered around cattle ranching and skiing. The proposed facilities plan provides support for these industries and strives to do it in an environmentally sound manner. It should benefit the productivity of local croplands if effluent and sludge are properly applied to them. However, when the effluent is discharged into the Yampa River, some degradation in water quality could result, even though it would represent an improvement over existing conditions. These effluents could also improve the productivity of the river's ecosystem, by fertilizing with organics, ammonia and nitrate.

After 20 or 30 years, the productivity of the area's croplands could still be enhanced by the application of sewage wastes. However, the productivity of the Yampa River could deteriorate if other sources of pollution are not checked. These sources include urban and agricultural runoff, plus river bank erosion. All of these sources affect the short-term productivity of the Yampa although they could degrade it even more in the future. Urban runoff should increase more than the others and special considerations should be given to its control and treatment. The output of agricultural runoff, should be relatively constant unless new techniques can be developed to reduce it. The overall impact could be a long-term reduction in aquatic productivity.

XI. Irreversible and Irretrievable Commitment of Resources

Despite the improvements in environmental quality that the recommended action would provide, certain resources would be required to implement it. These resources would include raw materials to build the plant and its distribution system: steel, concrete, plastic, glass, etc. Most of this material would represent an irreversible and irretrievable commitment of resources although future improvements in recycling technology could enable some of it to be reclaimed and reused. Other resources would include various types of energy, necessary to build and operate the system. These resources would be irretrievable once they are used. During the operation of the system, the energy costs would represent about 48 percent of the total operational costs. Other costs are listed in Table XXVII and include costs for labor, repairs and chemicals. The total outlay for 1985 is projected to be $102,097 and for 2010, $192,121.

The land would represent another resource committed to the project. Those lands under irrigation would be committed for the duration of the project, after which they could be returned to their current use. However, the quality of these lands could be irreversibly altered by the proposed irrigation practices, even though this is expected to be beneficial. Those lands used by the plant should not be irreversibly committed since future reclamation activities could restore most of their productivity.

TABLE XXVII

Average Annual Operating Costs (1976 dollars)

	For Phase I by 1985	For Phase II by 2010
Labor	$31,856	$59,576
Chemicals	11,523	14,855
Repair and Replacement	10,916	28,854
Power	49,932 @2¢/kwh	92,856
Land Treatment Credit (sale of crops)	-2,130	-4,020
Total	$102,097	$192,121

The condition of the Yampa River will be altered by the increased sewage load to be discharged into it. This change could be beneficial if the discharged nutrients promote an increase in the river's productivity. However, future changes in sewage treatment could alter these conditions so it is only irreversible throughout the lifetime of the proposed facilities.

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Appendix A

Water Quality Standards and Regulations

TABLE I

STREAM QUALITY DESIGNATION

Standard	Meaning
A1, A2, B1, B2	Suitable as a raw water supply treatable to drinking water standards
A1, B1	Cold water fishery (DO = 6 mg/l, Temp. 68° F)
A2, B2	Warm water fishery (DO = 5 mg/l, Temp. 90°F)
A1, A2	Suitable for all purposes for which raw water is customarily used including primary contact recreation (Fecal Coli = 200/100 ml, pH = 6.5-8.5)
B1, B2	Suitable for all purposes for which raw water is customarily used except primary contact recreation (Fecal Coli = 1000/100 ml, pH = 6-9).

TABLE II

COLORADO STANDARDS FOR THE DISCHARGE OF WASTES

Parameter	Parameter Limitation, Effective August 21, 1975 7-Day Average	30-Day Average
BOD_5	45 mg/l	30 mg/l
Suspended Solid	45 mg/l	30 mg/l
Fecal Coliform	As determined by the Division of Administration of the State Health Department to protect public health in the stream classification to which the discharge is made.	
Residual Chlorine	Less than 0.5 mg/l	
pH	6.0 - 9.0	
Oil and Grease	10 mg/l and there shall be no visible sheen.	

TABLE III

ROUTT COUNTY STANDARDS FOR DISCHARGE OF WASTES
(Summary)

Parameter	Parameter Limitation Effective: July 11, 1973	July 1, 1975	July 1, 1978
BOD_5	30 mg/l	25 mg/l	10 mg/l
Suspended Solids	30 mg/l	25 mg/l	20 mg/l
Fecal Coliform (to Class B_3 stream)	500/100 mls	500/100 mls	500/100 mls
Residual Chlorine	Not less than 0.1 mg/l and not more than 0.5 mg/l.		
pH	Applicable Water Quality Standards (6.0 - 9.0)		
Oil and Grease	10 mg/l	10 mg/l	10 mg/l

TABLE V

STEAMBOAT SPRINGS REGIONAL SERVICES AUTHORITY EFFLUENT LIMITATION CRITERIA(1)

CONSTITUENT	RAW WATER SUPPLY	NATURAL BACKGROUND LEVEL	2010 TREATMENT PLANT INFLUENT(2)	EFFLUENT LIMITATIONS 1978	EFFLUENT LIMITATIONS 1983	EFFLUENT LIMITATIONS 1985	RATIONALE (CONTROLLING USE)
MAJOR CRITERIA							
OXYGEN DEMAND							
Biochemical Oxygen Demand		3.06 mg/l	168 mg/ (5432#)	10 mg/l (238 #)	10 mg/l (238 #)	5 mg/l	EPA requires minimum 85% removal. Discharge permit limit of 238 lbs/day. County resolution limit of 10 mg/l for 1978. Permit limit controls effluent quality to less than 10 mg/l for first phase construction. Non-point pollutants are additional. 5 ppm limitation for 1985 compatible with background level and future population loads.
Chemical Oxygen Demand			219 mg/l (7086#)		20 mg/l	10 mg/l	Compatible with BOD removal. Lower COD desirable
Dissolved Oxygen		8.9 mg/l		6 mg/l min.	6 mg/l min	6 mg/l min	Minimum for cold water fishery. Stream standards and antidegradation statements required.
SOLIDS							
Suspended Solids			146 mg/l (4724#)	20 mg/l	10 mg/l	5 mg/l	EPA requires minimum 85% removal. County resolution limit of 20 mg/l for 1978. 1983 and 1985 standards compatible with BOD removal. 1985 limitation agrees with NDCP.
Settleable Solids				.5 mg/l	Free From	Free From	1978 limitations based on State, County standards, 1983 and 1985 agrees with stream standards and NDCP.
Total Dissolved Solids		471 mg/l			500 - 1,000 mg/l	500 - 1,000 mg/l	TDS not critical. Major sources of TDS are area hot springs. Parameter involved with ammonia.
PHYSICAL/CHEMICAL PARAMETER							
Temperature				20° C maximum	± 1°C of ambient		Stream standards require, critical parameter involved with ammonia.
pH	6.9	8.3		6 - 9	6.5 - 8.5	6.5 - 8.5	Stream standards require, critical parameter involved with ammonia. 1983 and 1985 values necessary for NDCP, aquatic life and recreation waters.
Turbidity		28 JTU		20 JTU	10% change in C.P.		1978 values based on Colorado and County standards, 1983 and 1985 values for aquatic life.
Color					Free From	Free From	Stream standards.
Alkalinity	22.2 mg/l					30 - 130 mg/l	Fresh water wildlife.
Chlorine				.1-.5mg/l	.025 mg/l	.025 mg/l	1983 and 1985 value based on no decay loss in mixing and maximum .002 mg/l concentration for acquatic life. See text.
MICROORGANISM							
Fecal Coliform		255/100 ml 70.6/100 ml		200/100 ml	200/100 ml	200/100 ml	EPA Standards.
Viruses							Goal is absence of viruses. No test data, but currently in effluent.
ORGANICS							
Pesticides					.01 96 HR LC 50	.01 96 HR LC 50	Aquatic Life.
Phenols					.005 mg/l	.001 mg/l	Fresh water public supply, 1983 based on assimilative capacity, 1985 NDCP.
Oils & Greases					.05 96 HR LD 50	.05 96 HR LD 50	Aquatic life, stream standards require no visible oil.
MACRO NUTRIENTS							
Ammonia N (NH_3-N)		.07 mg/l	10 mg/l (354#)	Varies Monthly 2-9mg/l	Varies Monthly 2-9 mg/l	Varies Monthly 0.5-9 mg/l	1978 and 1983 limitations vary according to monthly low flow, temperature, PH, and TDS. 1985 values use extreme values of temperature, TDS and background level to insure very low probability of toxic conditions to acquatic life. See Text for monthly values.

(1) Prepared by Wright-McLaughlin Engineers, April, 1976.
(2) Assuming a 25% reduction in excess infiltration and inflow.

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TABLE V (con't)

STEAMBOAT SPRINGS REGIONAL SERVICES AUTHORITY
EFFLUENT LIMITATION CRITERIA

CONSTITUENT	RAW WATER SUPPLY	NATURAL BACKGROUND LEVEL	2010 TREATMENT PLANT INFLUENT(3)	EFFLUENT LIMITATIONS 1978	1983	1985	RATIONALE (CONTROLLING USE)
MINOR CRITERIA							
MACRO NUTRIENTS							
Total Nitrogen			14 mg/l (472#)	10 mg/l	10 mg/l	10 mg/l	As nitrates must be limited, Total N cannot be appreciably greater, also see text.
Organic N							Limitation involved with Total Nitrogen limitation, normal processes convert organic to other nitrogen forms.
Nitrate N	.6 mg/l	.26 mg/l			< 9.0 mg/l	< 9.0 mg/l	Drinking water standards.
Phosphorous		.07 mg/l	7 mg/l (236#)	5 mg/l	5 mg/l	5 mg/l	Limitations based on dilution by streamflow that give reliable levels to maintain recreation waters. See text.
Potassium		.17 mg/l				.15 mg/l	NDCP, based on background level.
Sulfur (Sulfides)				.01 mg/l	.002 mg/l	.002 mg/l	Aquatic life, 1983 based on assimulative capacity, 1985 NDCP.(1)
Calcium	5.7 mg/l	110 mg/l					See alkalinity.
Magnesium	2.7 mg/l	127 mg/l					See alkalinity.
MICRO NUTRIENTS							
Iron		.19 mg/l			1.5 mg/l	.3 mg/l	Fresh water public water supply, aquatic life, 1983 based on assimulative capacity
Manganese					.25 mg/l	.05 mg/l	Fresh water supply, aquatic life, 1983 based on assimulative capacity, 1985 NDCP.
Boron		.041 mg/l			5 mg/l	1 mg/l	Fresh water public water supply, irrigation, 1983 based on assimulative capacity, 1985 NDCP.
Zinc					.015 96 HR LC 50(2)	.003 96 HR LC 50	Aquatic life, 1983 based on assimulative capacity, 1985 NDCP.
Copper					.5 96 HR LC 50	0.1 96 HR LC 50	Aquatic life, 1983 based on assimulative capacity, 1985 NDCP, also for Livestock drinking water.
Molybdenum					.05 mg/l	.01 mg/l	Limit for irrigation water, 1983 based on assimulative capacity, 1985 NDCP.
METALS							
Aluminum						5 mg/l	1985 limitation for agricultural
Lead	> .01 mg/l				.15 mg/l	.03 mg/l	Aquatic life, 1983 based on assimulative capacity, 1985 NDCP.
Mercury	> .1 mg/l				.001 mg/l	.0002 mg/l	Aquatic life, 1983 based on assimulative capacity, 1985 NDCP
Chromium					.15 mg/l	.03 mg/l	Aquatic life, 1983 based on assimulative capacity, 1985 NDCP.
Cadmium	> .01 mg/l				.02 mg/l	.004 mg/l	Aquatic life, 1983 based on assimulative capacity, 1985 NDCP.
Nickel					.1 mg/l	.02 mg/l	Aquatic life, 1983 based on assimulative capacity, 1985 NDCP.
Sodium	2.4 mg/l	8.7					See alkalinity.

(1) NDCP No Discharge of Critical Pollutants.
(2) 96 HR LC50 Median Lethal Concentration - Concentration causes death to 50% of a population within 96 hours.
(3) Assuming a 25% reduction in excess infiltration and inflow.

TABLE IV

DISCHARGE PERMIT REQUIREMENTS *
for
SLEEPY BEAR (SB), STEAMBOAT SPRINGS (SS), MT. WERNER (MW), STEAMBOAT II (S2)

PARAMETER	AGENCY	Monitoring Schedule FREQUENCY	Monitoring Schedule SAMPLE-TYPE	Average Effluent Concentration 30 CONSECUTIVE DAY PERIOD	Average Effluent Concentration 7 CONSECUTIVE DAY PERIOD	DAILY
Total Flow	SB	Monthly	Instantaneous			
	SS	Weekly	Total			
	MW	Weekly	Continuous			
	SZ	Weekly	Instantaneous			
Total BOD$_5$ mg/l	SB	Monthly	Grab	30	45	N/A
	SS	Quarterly	Composite	30	45	60
	MW	Quarterly	Grab	30	45	N/A
	SZ	Monthly	Grab	30	45	N/A
Total Suspended Solids mg/l	SB	Monthly	Grab	30	45	N/A
	SS	Quarterly	Composite	30	45	60
	MW	Quarterly	Grab	30	45	N/A
	SZ	Monthly	Grab	30	45	
Fecal Coliform no./100 ml	SB	Monthly	Grab	200	400	N/A
	SS	Quarterly	Grab	200	400	N/A
	MW	Quarterly	Grab	200	400	N/A
	SZ	Monthly	Grab	1000	1500	
pH Units	SB	Monthly	Grab	shall remain between 6.0 - 9.0		
	SS	Weekly	Grab	shall remain between 6.5 - 8.5		
	MW	Weekly	Grab	shall remain between 6.0 - 9.0		
	SZ	Weekly	Grab	shall remain between 6.0 - 9.0		
Total Residual Chlorine mg/l	SB	Weekly	Grab	N/A	0.5	N/A
	SS	Daily	Grab	N/A	N/A	0.5
	MW	N/A	N/A	N/A	0.5	N/A
	SZ	Weekly	Grab		0.5	
Total BOD$_5$ lbs./day	SB			3.0	(effective as soon as reasonable & practical, but not later than Sept. 1, 1976)	
	SS			181	(effective as soon as reasonable & practical, but not later than July 1, 1977)	
	MW	Quarterly	Grab	37	(effective immediately)	
	SZ	Monthly		13.64	(effective after July 1, 1977)	
Oil and Grease	SB			shall not exceed 10mg/l in any grab & no visible sheen		
	SS					10.0
	MW				10.0	
	SZ				10.0	

*SOURCE:
EPA "Authorization to Discharge Under the National Pollutant Discharge Elimination System."

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
REGION VIII
FEDERAL OFFICE BUILDING
19TH AND STOUT STREETS
DENVER, COLORADO 80202

OFFICE OF THE REGIONAL DIRECTOR

July 8, 1976

Mr. John A. Green
Regional Administrator
U.S. Environmental Protection Agency
1860 Lincoln Street
Denver, Colorado 80203

Dear Mr. Green:

Thank you for the opportunity to review the draft Environmental Impact Statement (EIS) for the Steamboat Springs Regional Service Authority (Routt County, Colorado.)

It appears that the impacts expected to result from the proposed project and reasonable alternatives thereto have been adequately addressed.

Sincerely yours,

for Rulon R. Garfield
Regional Director

cc: Office of Environmental Affairs, HEW
Washington, D.C.

Council on Environmental Quality
Washington, D.C. (2 copies)

Colorado-Ute Electric Association, Inc.
P. O. Box 1149
Montrose, Colorado 81401

July 16, 1976

Mr. John A. Green
Regional Administrator
U. S. Environmental Protection Agency
1860 Lincoln Street
Denver, Colorado 80203

Dear Mr. Green:

Steamboat Springs Regional Service Authority
201 Wastewater Facilities Plan

Colorado-Ute Electric Association, Inc., supports the action proposed in the Draft Environmental Impact Statement concerning the Steamboat Springs Regional Service Authority 201 Wastewater Facilities Plan.

Colorado-Ute has two steam-electric generating stations downstream from the proposed action. The two-unit Hayden Station (one unit operating, one unit in a start-up mode) in western Routt County will withdraw (when both units are operational) 11,800 acre-feet of water per year from the Yampa River five miles east of Hayden. The two-unit Craig Station (under construction) in Moffat County will require 18,720 acre-feet of water per year from the Yampa River to be taken four miles downstream from Craig.

Since intake water quality has a direct effect on the operation of electric generating stations, Colorado-Ute strongly supports the Steamboat Springs Regional Authority's efforts to improve the Yampa River water quality.

Very truly yours,

John J. Bugas

John J. Bugas
President

JJB-JAW:ke

cc: G. Krumins
R. W. Bryant

DEPARTMENT OF THE ARMY
SACRAMENTO DISTRICT, CORPS OF ENGINEERS
650 CAPITOL MALL
SACRAMENTO, CALIFORNIA 95814

REPLY TO
ATTENTION OF

SPKED-W

22 July 1976

Regional Administrator
U.S. Environmental Protection Agency
Region VII
1860 Lincoln Street
Denver, CO 80203

Dear Sir:

This is in response to your recent letter requesting review and comment on the Draft Environmental Impact Statement (EIS) for the "Steamboat Springs Regional Service Authority, 201 Wastewater Facilities Plan."

Apparently, the proposed plan would include crossing the Yampa River at one or more locations. Details of these crossings are not presented; however, it is suggested that these crossings be designed to pass floodflows and to include sufficient backfill and riprap protection to preclude possible flood damage to facilities. Also, a Department of the Army permit under Section 404 of the Federal Water Pollution Control Act Amendments of 1972 may be required from this office if the proposed project includes discharge of dredged or fill material in waterways.

Thank you for the opportunity to review the draft EIS.

Sincerely yours,

for GEORGE C. WEDDELL
Chief, Engineering Division

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE
CENTER FOR DISEASE CONTROL

BUREAU OF LABORATORIES
VECTOR-BORNE DISEASES DIVISION
POST OFFICE BOX 2087
FORT COLLINS, COLORADO 80522

July 26, 1976

Mr. John A. Green
Regional Administrator
U.S. Environmental Protection Agency
Region VIII
1860 Lincoln Street
Denver, Colorado 80203

Dear Mr. Green:

Thank you for providing us with a copy of the draft environmental impact statement (EIS) for the "Steamboat Springs Regional Service Authority 201 Wastewater Facilities Plan" and for inviting our comments.

We note that Alternatives II and IV eliminate tertiary in-plant treatment and, instead, entail application of the disinfected effluent in a land treatment program designed to use the land as a natural filter medium. We also note that the Environmental Protection Agency (EPA) recommends the approach of Alternatives II and IV for the Steamboat Springs study area (page 11 of draft EIS). It is these two alternatives that are of concern to us with regard to the production of mosquito species which may transmit disease.

The association of mosquitoes with areas irrigated with sewage wastewater, as proposed in Alternatives II and IV, is well documented elsewhere (Zimmerman and Newson, 1975, *Proc. 62nd Ann. Meet. New Jersey Mosquito Control Assn.*, pp. 154-155). We also have received reports from mosquito abatement personnel in Marin County, California, which indicate that EPA subvention for wastewater treatment has exacerbated existing mosquito problems as a result of land application of wastewater. Mosquitoes may develop and emerge from water which stands for 48 hours or longer. The exact developmental time is affected by temperature and the availability of nutrients in the water. Certainly, sewage effluent rich in organic matter is a highly favorable medium for mosquito production; particularly so when applied to pasture or other grassy areas.

Mosquitoes of particular concern which occur in the Steamboat Springs area and which favor the type of breeding habitat just described include *Culex tarsalis* and *Aedes dorsalis*. The former species is the principal vector of western equine encephalitis (WEE) and St. Louis encephalitis (SLE) viruses in the western United States, and *A. dorsalis* also may be involved in the transmission of WEE in some areas. Both viruses are the cause of morbidity and mortality among humans in Colorado, and WEE virus also causes encephalitis in horses. For example, during 1975 there were 17 cases of WEE and 3 cases of SLE in humans in Colorado, and approximately 250 cases of WEE in horses in the state. These diseases do not occur in the absence of vector mosquitoes; therefore, the creation or expansion of breeding habitats for these mosquitoes must be viewed with concern.

In the event that sewage wastewater is used for a land treatment program in the Steamboat Springs area, we urge that appropriate measures be taken to assure that vector mosquito breeding habitats will not be created or expanded. Such measures would include (1) land preparation of treatment areas to eliminate low spots which would allow ponding of water, (2) adequate drainage of treatment areas and controlled application of water to prevent water from standing for more than 48 hours, and (3) a surveillance system for mosquito production so that remedial action can be taken if required.

We appreciate being afforded the opportunity to comment on this project and would appreciate receiving further drafts and a copy of the final environmental impact statement.

Sincerely yours,

Richard O. Hayes

Richard O. Hayes, Ph.D., M.P.H.
Chief, Water Resources Branch

cc:
Mr. Ted Davis

FEDERAL ENERGY ADMINISTRATION
REGION VIII
1075 South Yukon
P.O. Box 26247, Belmar Branch
Lakewood, Colorado 80226

July 27, 1976

Mr. John A. Green
Regional Administrator
Environmental Protection Agency
Region VIII
1860 Lincoln Street
Denver, Colorado 80203

Dear Jack:

The F.E.A. Regional Office has reviewed the Draft Environmental Impact Statement (DES) on the Steamboat Springs Regional Service Authority - 201 Wastewater Facilities Plan, in accordance with your letter received June 21, 1976. The F.E.A. would like to submit the following comments for your consideration:

1) Table II on page 18 mentions the goals and policies of the Steamboat Citizens Advisory Committee. These standards seem rather unrealistic when one considers that the water qualities measured at the Milner and Oak Creek Station consistently violate Colorado standards for B_1 streams. The policies and goals on page 18 seem to point toward an A_1 environment, which brings up the following question. Even though the proposal is badly needed, will Colorado A_1 standards be obtainable at the Milner station after the project's completion?

2) It is apparent that natural sources are discharging 24 tons of salt per day from the mineral springs around Steamboat. Although this does not directly relate to the sewage disposal projects, it would be beneficial if this water was treated to remove excessive salts. Is this under consideration?

Aside from the above general questions, it is obvious the wastewater plan is badly needed and worthy of immediate attention.

Thank you for giving us the opportunity to review and comment on this most worthy and vital project.

Very sincerely yours,

Dudley E. Faver
Regional Administrator

cc: Mr. Robert Stern, NFEA

UNITED STATES DEPARTMENT OF AGRICULTURE
FOREST SERVICE
11177 West 8th Avenue
P.O. Box 25127
Lakewood, Colorado 80225

8420
August 4, 1976

John A. Green, Regional Administrator
U. S. Environmental Protection Agency
1860 Lincoln Street
Denver, Colorado 80203

Dear Mr. Green:

Thank you for the opportunity to review the Draft Environmental Statement for the Steamboat Springs Regional Service Authority, 201 Wastewater Facilities Plan.

Although the project does not directly affect National Forest lands, secondary effects may include the need for additional domestic water storage brought on by additional growth in the Steamboat Springs area. An efficient waste water treatment plant would allow for growth.

We concur with the recommended plan and support the land treatment measure. The latter would be especially desirable if feasible for strip mine spoil reclamation.

Sincerely,

SHHanks
S. H. HANKS
Deputy Regional Forester, Resources

6200-11 (1/69)

United States Department of the Interior
OFFICE OF THE SECRETARY
MISSOURI BASIN REGION
DENVER, COLORADO 80225

In Reply Refer To
ER 76/615

AUG 0 4 1976

John A. Green, Regional Administrator
Environmental Protection Agency - Region VIII
1860 Lincoln Street
Denver, Colorado 80203

Dear Mr. Green:

Following are consolidated comments on the draft environmental statement for Steamboat Springs Regional Service Authority, Routt County, Colorado, based on reviews by the Bureau of Land Management, National Park Service, Bureau of Outdoor Recreation, Fish and Wildlife Service, Geological Survey, and the Bureau of Reclamation.

General Comments

The proposals examined in the above draft environmental statement would involve very little of the Bureau of Land Management's legal jurisdiction or special expertise.

No established or studied units of the National Park System appear to be adversely affected by the plan. Neither does the plan appear to adversely affect any site registered as a National Historic, Natural or Environmental Education Landmark, or any site listed as eligible for such registration.

The statement should reflect consultation with the National Register of Historic Places, and discuss whether any National Register properties will be affected. If the plan has an effect on a National Register listing, the statement should reflect further compliance with Section 106 of the National Historic Preservation Act of 1966 (P. L. 89-665).

The draft statement does not clearly confirm consultation with the Colorado State Historic Preservation Officer, who is Mr. Stephen H. Hart, Chairman, State Historical Society, Colorado State Museum, 200 14th Avenue, Denver, Colorado 80203. The final environmental statement should reflect that he was consulted to determine whether the plan will affect any cultural site that may be in the process of nomination to the National Register, and it should also contain a copy of his reply.

The statement does not adequately provide consideration for cultural resources that may be affected by the proposed wastewater treatment facility. In order to correct this situation, the Colorado State Archeologist (Dr. Bruce Rippeteau, Department of Anthropology, University of Colorado, Boulder, Colorado 80304) should be consulted regarding the need for an archeological survey that will comply with the letter and spirit of Executive Order 11593 and the National Environmental Policy Act of 1970. Results of such a survey should be provided in the final statement along with any recommendations for mitigative measures. Provision should be made for immediate work stoppage in the event previously unknown archeological resources should be discovered in the course of the project to insure proper professional review of such resources and proper mitigative action.

Aquatic wildlife resources within the project area are adequately discussed. The awareness of potential impacts that the proposed action will have on endangered fishes and the recognition of a need for strict effluent water quality standards to insure their continued survival are commendable.

Terrestrial wildlife resources, as discussed in the draft environmental statement, are quite general. It is suggested that an inventory of terrestrial wildlife currently inhabiting the construction site be included in the final environmental statement. Assessments of impacts on fish and wildlife resources during construction phases of the project should also be included.

It is recommended that the statement describe the current recreational use of the Yampa River as well as the potential of this project to enhance such use. In addition, the present collection system, together with proposed interceptors and outfall lines for each alternative, should be mapped and the trail potential of the associated rights-of-way examined in the final environmental statement.

Specific Comments

Page 68 - Table XX; correct scientific names:

Humpback chub - *Gila cypha*
Bonytail chub - *Gila elegans*
Colorado squawfish - *Ptychocheilus lucius*

Page 69 - Rare and Endangered Species

> The greater sandhill crane and the Colorado Cutthroat trout, though not on the United States' List of Endangered Fauna, are on Colorado's State List of Threatened and Endangered Wildlife.
>
> For clarification, species appearing on Colorado's State Endangered List and the United States' Endangered List should be separated.

We appreciate the opportunity to review this draft environmental statement and hope our comments will be helpful to you.

Sincerely yours,

John E Rayburn

for Special Assistant
to the Secretary

In duplicate

ROUTT COUNTY REGIONAL PLANNING COMMISSION

August 4, 1976

Mr. John A. Green,
Administrator - Region VIII
Environmental Protection Agency
1860 Lincoln
Denver, Colorado 8020

Re: Steamboat Springs 201
Environmental Impact Statement

Dear Sir:

The Routt County Regional Planning Commission has reviewed the Draft EIS, Steamboat Springs Regional Service Authority, 201 Wastewater Facilities Plan and submits the following comments:

1. On Page ii there is a statement which says that the Yampa River is in poor condition due to upstream bank erosion, among other reasons. This broad statement implies improper agricultural practices upstream, and is not substantiated within the study. The Commission unanimously passed the following motion:

   Mr. de Ganahl moved to direct the Staff to write a letter to be submitted to the Environmental Protection Agency requesting that the scope of the Environmental Impact Statement be strictly limited to the effects of sewage effluent and urban non-point runoff in the Yampa River. Mr. Hufstetler seconded the motion, which carried unanimously.

2. Land treatment may be a viable alternative. However, neither the study nor the consultant provided data to support the fact that land to be provided for this use could absorb the effluent loads proposed rather than have the soil saturated with subsequent surface runoff or that the amount of effluent would be satisfactory for productive agricultural purposes.

3. A statement is made that the growing season in the proposed area is 90-100 days (p.11). The Colorado Agricultural Handbook states that the normal growing season is 59 days for Steamboat Springs. Further clarification of this statement is necessary. Also, if a crop, such as hay, is to be harvested, the actual number of days land application is done should be reduced to enable this harvesting.

.O. BOX 9017 STEAMBOAT SPRINGS, COLORADO, 80477 TEL. 879-2700

4. References to the fact that there is no adopted Comprehensive Plan for Routt County are not entirely correct. There is an adopted land use plan for the West Steamboat Area, and there has been adopted a statement of Comprehensive Plan Policy for the entire County. The West Steamboat Plan includes most of the area under consideration for location of the Regional Wastewater Facility.

5. Among reasons given to support statements that the present Steamboat Springs treatment facility location is not acceptable are that it is in a floodplain and would have to be floodproofed, which is correct. The statement continues by implying that residential development of the area will continue. Both the West Steamboat Land Use Plan and the study recognize only the residential development which now exists and suggests that additional adjacent development be industrial in nature. Also, additional residential development within a recognized floodplain is not desirable. Industrial-type development can be compatible with wastewater treatment plants. Industrial uses may also be desirable at this location because of the existing approach pattern to the Routt County STOL Airport.

   Statements within the study also indicate that the present plant is not causing problems for the adjacent development. This development commenced after the treatment plant went into operation. A new or expanded facility, treating wastewater at 1983 standards should be no more objectionable than the existing facility.

6. Population projections may or may not be adequate. Peak population was averaged for the high thirty-day period. This possibly should have been done for the peak day situation. Also, it is doubted that an increase in coal development in the area will cause a corresponding decrease in recreational population.

7. Financial capability of some of the entities to be included in this project is highly suspect. Before total commitment to an expensive wastewater solution is made, additional fiscal study and agreement is necessary.

8. In addition to the West Steamboat Plan and the Comprehensive Plan Statement of Policy, the Commission approved the following motion:

   Mr. Sprengle moved that the Routt County Regional Planning Commission resolve that the location of sewage facilities will not be allowed to influence growth contrary to its plans. Mr. de Ganahl seconded, and the motion carried unanimously.

9. The Commission made no motion to either support or deny the recommended alternative Number IV.

Sincerely,

ROUTT COUNTY REGIONAL
PLANNING COMMISSION

Daniel R. Ellison,
Planning Administrator

DRE/kw

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
REGION EIGHT

August 6, 1976
IN REPLY REFER TO:
08-00.21

Mr. John A. Green
Regional Administrator, Region VIII
U.S. Environmental Protection Agency
1860 Lincoln
Denver, CO 80203

Dear Mr. Green:

Our office appreciates the opportunity to review the Draft Environmental Impact Statement on Steamboat Springs Regional Service Authority, 201 Waste Water Facilities Plan.

This proposed development will have no significant impact on the State Highway System. We have no other comments to offer.

Sincerely yours,

F. S. Allison

F. S. Allison

United States Department of the Interior
GEOLOGICAL SURVEY
Box 25046
Denver Federal Center
Denver, Colorado 80225
Mail Stop #415

IN REPLY REFER TO:

Water Resources Division
Colorado District

August 9, 1976

Memorandum

To: Regional Administrator, U.S. Environmental Protection Agency
Region VIII, 1860 Lincoln Street, Denver, Colorado 80203

From: Timothy D. Steele, WRD, Lakewood, Colorado

Subject: Steamboat Springs Regional Service (Routt County, Colorado) Authority 201 Waste-water Facilities Plan -- Draft Environmental Impact Statement (EIS) Review Comments

Attached are detailed technical and editorial comments on the subject draft report prepared for EPA by Weiner and Associates of Denver, Colorado. It would be appreciated if these comments could be given consideration in preparation of the final EIS for this facility plant. If any specific questions are raised regarding any of the comments, do not hesitate to give me a call.

Tim D Steele
Timothy D. Steele

Attachments

cc: Ron Pifer
Weiner and Assoc., Inc.
Ron Eddy, Environmental Protection Agency

STEAMBOAT SPRINGS REGIONAL SERVICE AUTHORITY 201

WASTE-WATER FACILITIES PLAN

REVIEW COMMENTS BY U.S. GEOLOGICAL SURVEY

(Compiled by T. D. Steele)

1. Page 2, last paragraph.--The Northwest Colorado Coal EIS Report has been prepared jointly by personnel of the U.S. Bureau of Land Management and the U.S. Geological Survey.

2. Page 4, first paragraph.--More supporting evidence is needed to characterize the Yampa River as "poor to fair". Site the reference indicating that the Yampa River is "one of the poorest trout streams in the Colorado mainstem". This condition could be due to the heavy fishing demands or long-term ambient conditions rather than the implied adverse human-induced impacts on water quality. Although heavy "silt" deposits may be noted along mainstem banks during low flows, these most often are removed each year by scouring during high flows due to snowmelt in the spring.

3. Page 5, second paragraph.--". . . additional facilities for treatment of organic matter (biochemical oxygen demand--BOD) and suspended sediment found in domestic and municipal waste."

4. Page 5, last paragraph.--Clarify the term "flow leveling".

5. Page 7, paragraph or alternative II.--One might disagree with the second sentence. Ammonia toxicity may likely increase below 5°C due to cold stress on fish. Winter periods may be equally as critical as summer months.

6. Page 7, paragraph on no-action alternative.--Could the existing 5 treatment facilities not be brought into compliance with the water-quality standards? True, the economy scale and modes of operation must be considered, but the inference of the sentence is misleading.

7. Page 10, Treatment Options, first paragraph.--Seasonal loadings are much higher in the winter months. Has the land-treatment option been discounted entirely for the winter period?

8. Pages 13 to 14.--The range of present-value capital costs is relatively small (plus or minus 8 percent). How much uncertainty is inherent in these figures? Has EPA officially (explicitly) supported a preference for alternative IV? (See recommended action). State some of the "additional material" needed.

9. Page 21, table 3.--If the 7-day, 10-year low-flow statistic is computed by monthly rather than annual increments, it should be stated explicitly and another term should be used.

10. Page 22, 3rd paragraph.--The U.S. Geological Survey surface-water record for the Yampa River site at Steamboat Springs (station 09239500) began in October 1904. The published record has not been continuous to present; the 67-year period of record sites is actually for the 1905-06 and 1910-74 water years.

11. Page 23, figure 3.--Because monthly mean flows are shown, a monthly bar-graph would be preferred over a continuous hydrograph.

12. Pages 23-24.--Recall comment on page 21 with regard to $Q_{7,10}$ definition. It would seem that apples and oranges are being compared here.

13. Page 24, second paragraph.--A need is indicated here for a regional analysis of low-flow characteristics. Studies by Tuthill (1975), University of Colorado, M.S. thesis, and the USGS (Livingston, 1970, open-file report) should be cited and considered here.

14. Page 26, first paragraph.--The term "data" is plural. Cite reference to USGS Open-File Reports 76-367, and 76-368. The USGS had primary responsibility for design and execution of the data-collection program. The data collected for the Waste-Assimilative Capacity Analysis, in part shown in table VIII were applied to further analysis and evaluation using two operational water-quality models (Bauer and others, 1976, in review).

15. Page 28, Table VII.--The indicated source of data in this table is hard to read. Should give specific station number and/or location.

16. Page 29, third paragraph.--"chemical conditions"--need to be more specific; water hardness is a critical factor.

17. Page 29, third paragraph.--See comments for page 26, first paragraph. Often only one measurement was made, so the "maximum-minimum" designation is a misnomer.

18. Page 29, fifth paragraph.--Some big assumptions are being made here. The effects of the nearby sulfur springs should not be underestimated. (R. E. Moran, USGS, oral commun., 1976). Specific conductance of cold springs (estimated 40-50 gallons per minute flows) has been measured at 7,500 micromhos per centimeter. Specific conductance of hot springs is estimated at 1450 micromhos per centimeter at 250 gallons per minute.

19. Page 30, Table VIII.--In the course of modeling application by USGS, some adjustments to the data shown here were made. For example, it is now felt that sampling site YM-5 (Y5 in your table) is non-representative of the total cross-section of the mainstem stream, so that too high an influence from the Steamboat Springs sewage-treatment plant effluent is reflected in the observed data (See D. P. Bauer and others, 1976, in review). We would prefer that the station code designations set by the USGS be maintained throughout the report in order to expedite cross-referencing.

20. Page 31, first paragraph.--Ongoing USGS work by Brogden and Giles should be cited if their reports are in final published form.

21. Page 34, first paragraph, last sentence.--"data collected by U.S. Geological Survey and Colorado Department of Health presented in Tables VIII and X respectively, show that . . . ."

22. Page 33, last paragraph, last sentence.--This does not agree with Northwest Colorado Coal EIS Report which gives a plant design capacity of 650,000 gpd.

23. Page 34, fourth paragraph.--Stated design capacity does not agree with that given in Northwest Colorado Coal EIS (65,000 gpd). Note the typo in line 6 ("is" instead of "if").

24. Page 37, second paragraph, line 2.--Note typo "one" instead of "on".

25. Page 40, last paragraph.--How "extensive" have the Wright-McLaughlin investigations been? Cite references and summarize results.

26. Page 41, Table XI.--To what extent are agricultural return flows accounted for in this summary?

27. Page 41, second paragraph.--More recent samplings of mineral springs should be noted (See comment item 18 above). Do odors from springs "provide a natural esthetic asset"?

28. Page 46.--Technical and economic impacts of water infiltration losses cannot be emphasized enough.

29. Page 60, Aquatic section, first paragraph.--Reference should be made to the work by EPA (Ron Eddy, 1976, in review), and CSU (Libby Ames, Department of Zoology and Entomology, 1976). These studies would take issue with the "poor" catagorization regarding the Yampa River ecological health. References are needed for each category: (1) aquatic plants, (2) insects, and (3) fish. The recent EPA study did show decreases in diversity below point-source discharges, but total number of organisims did not follow a similar trend.

30. Page 60, last paragraph.--Cite specific references to detrimental "chemical and physical conditions". Up to this point only the possible suspended-sediment physical limitation has been mentioned. The matter of effects of year-round variations in sediment loadings on spawning has not been addressed. Possible lack of spawning areas and sedimentation may be more significant factors in reducing trout populations than reduced insect population.

31. Page 62, first paragraph.--"poor" classification of stream area II needs further clarification. Up to now it has not been noted that food for trout is scarce.

32. Page 62, second paragraph.--Describe what is meant by "humanly-induced disturbances".

33. Page 62, third paragraph.--Diatoms are also algae.

34. Page 62, fourth paragraph and table XVII (page 63).--See page 30, Table VIII note. Suggest preserving YM, YT, and YE designations (See table 2 of USGS Open-File Report 76-367). Line 5--substitute term "algae" for "plants". The two diatoms and blue-green alga also were found at USGS sampling site Y-71 (Yampa River above Oak Creek) during the August-September reconnaissance survey. Biomass was 8.2 grams per square meter dry and 0.6 grams per square meter ash.

35. Page 62, fifth paragraph, first sentence.--"Other sites also have been sampled by the USGS." (Omit rest of sentence as written).

36. Page 63, Table XVII.--Note changes in footnote designation on attached revised sheet: 0 equals observed; not actually accounted, E equals estimated; not actually counted. "Melosira" is misspelled.

37. Page 64, Table XVIII.--Suggested revisions: (1) Note USGS source of data; (2) omit date designation (see previous comment); (3) maintain YM code designations to avoid confusion with USGS reconnaissance survey data; (4) data appear to be contrary to text, in that biomass is higher upstream from Steamboat Springs.

38. Page 65, first paragraph, line 2.--"combined density" don't think one can simply combine a + b.

39. Page 65, third paragraph, sentence 3.--This was also the case at site Y-71 (Yampa River above Oak Creek) upstream from Steamboat Springs.

40. Page 65, fourth paragraph, line 8.--The use of indicator organisims has a large degree of uncertainity at the generic level, let alone the family level.

41. Page 65, fifth paragraph, last sentence.--This inference is very dependant upon the types of organisims that are increased. If the number per square meter are increased with nothing but chironomids it is doubtful that the carrying capacity would increase.

42. Page 65, last three paragraphs.--Study-report inferences are based upon results on samples collected at one point in time using a technique (Surber) many biologists would refute.

43. Page 66, Table XIX.--It should be noted that USGS data for number per square feet differ greatly with EPA results (Ron Eddy, oral communication, 1976). This discrepancy may be due primarily to the smaller mesh size used by USGS. Without this inter-comparison and related discussion, perhaps utility of this tabular summary is minimal.

44. Page 67, paragraph 3, last sentence.--Suggest that the last sentence be omitted. Is the inference that other fish species also are doing poorly? (See also paragraph 4, first sentence).

45. Page 67, fourth paragraph.--Last two sentences in paragraph should be referenced.

46. Page 68, Table XX.--Cite data source in this table. Who established the population status designation? Does Colorado Fish and Game have more specific data on relative abundance of indigenous species?

47. Page 76, paragraph 3, first sentence.--See comment item 1 above regarding preparation of Northwest Colorado Coal EIS Report. BLM was lead agency but numerous USGS personnel collaborated in preparation of the report.

48. Page 81, last paragraph.--Begin first sentence with "It is our opinion that . . . .".

49. Page 84, second paragraph.--Implications of use of "peak season" population figures relative to the "peak day" or "peak week" values needs to be discussed in greater detail, particularly as to its effects on design of waste-water treatment facilities.

50. Page 84, third paragraph, last sentence.--Numerous reservoirs have been proposed for construction in the Yampa River basin other than those by the U.S. Bureau of Reclamation.

51. Page 87, fourth paragraph, first sentence.--Define "semi-public" lands.

52. Page 99, Table at bottom of page.--Spell out units of measurement (dB = decibel?). What is meant by "(A)"?

53. Page 100, third paragraph.--What part of Routt County is 171 miles from Denver? Is this road or air miles?

54. Pages 104 to 105.--Several non-Federal Projects are described in this section. No mention was made of the Lake Catamount development which potentially has significant quantity and quality implications on the Yampa River waters flowing into the Steamboat Springs area. Also, the proposed Oak Creek Power Project has major water-development components impacting upon the water resources of the study area.

55. Pages 129-130.--Ground water-surface water interactions in the study area reach of the Yampa River need to be considered, both from a physical and legalistic standpoint.

56. Page 143.--This section is quite general. Long-term water-quality effects should be discussed in some detail.

57. Pages 149-153.--The following references should be considered for inclusion:

Livingston, R. K., 1970, Evaluation of streamflow data program in Colorado: U.S. Geol. Survey Open-File Report, 72 p.

Steele, T. D., Bauer, D. P., Wentz, D. A., and Warner, J. W., 1976, An environmental assessment of impacts of coal development on the water resources of the Yampa River Basin, Colorado and Wyoming--Phase-I Work Plan: U.S. Geol. Survey Open-File Report 76-367, May 1976, 17 p.

Steele, T. D., James, I. C. II., Bauer, D. P., and others, 1976, An environmental assessment of impacts of coal development on the water resources of the Yampa River Basin, Colorado and Wyoming--Phase-II Work Plan: U.S. Geol Survey Open-File Report 76-368, May 1976, 33 p.

Tuthill, D. R. Jr., 1975, Low-flow quantity analysis for mountain tributaries--the Yampa River Basin: Colorado University unpublished M.S. thesis, 73 p.

Attachments
p. 63, table XVII
p. 64, table XVIII

TDS 8/9/76

UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
P. O. Box 17107, Denver, Colorado 80217

August 9, 1976

Mr. John A. Green
Regional Administrator
U. S. Environmental Protection Agency
Region VIII
1860 Lincoln Street
Denver, Colorado 80203

Dear Mr. Green:

We have reviewed the draft environmental impact statement for the Steamboat Springs, Colorado, Regional Service Authority-201 Wastewater Facilities Plan.

We have the following comments:

1. Page 58, Soils:

   a. We believe the description of the soil resource in this section is inadequate and should be strengthened in the final EIS. We suggest a soil map of the project area be included in the final EIS.

   b. Charles A. Hogelin is the SCS District Conservationist at Steamboat Springs. We suggest this correction be made in the final EIS.

   c. It is apparent that Wright-McLaughlin Engineers misunderstood the information provided them by SCS concerning the land capability classification system.

   According to the SCS land capability system, the term "cultivation or land suitable for cultivation" is referring to cultivated crops such as wheat or other row-crops grown on cropland. (Land Use Capability Class I-IV.)

   Non-cultivated crops we defined as permanent pasture, hayland and rangeland. (Capability Classes V-VIII.)

   (Two pamphlets are enclosed to further explain the SCS Land Capability Classification System.)

   As a result of the above misinterpretation of resource data by Wright-McLaughlin Engineers, we believe the following sentences should be deleted from the final EIS:

"However, these soils are currently being cultivated and have been cultivated for many years. Because of this disparity, Wright-McLaughlin Engineers asked the SCS for an explanation. They were told that the current classification is based on the soil temperatures for growing corn. Yet, corn is not grown on these soils along the Yampa Valley.

However, due to the rationale for developing these ratings, they are not deemed as sufficient evaluations for the land treatment alternatives proposed for the SSRSA."

2. Pages 10 and 122:

Installation of an "underdrain system" is mentioned as a construction to lower the high water table to facilitate large amounts of wastewater application.

However, the location, size, and environmental impact of the proposed "underdrain" is not discussed in the draft EIS. Therefore, we believe that final EIS should address this topic in greater detail.

3. Page 122; Wastewater Application:

   a. We believe the final EIS should address the potential surface runoff of effluent which may occur when the rate of wastewater application approaches 7 acre-feet per acre per year.

   b. What is the infiltration rate of the soils located at the proposed site, with and without, the "underdrain system"?

   c. We believe the final EIS should further evaluate the statement that Reed Canarygrass may need supplemental fertilization, even if 63-147 pounds of nitrogen per acre per year are applied by the effluent. We believe the 300 pounds of nitrogen uptake (per acre per year) by reed canarygrass represents a maximum level of nitrogen uptake. Reed canarygrass will grow quite satisfactorily on lesser rates of nitrogen.

4. Page 123:

We suggest the final EIS include the source of the information listed in Table XXIV.

5. Page 122-127:

It appears the rate of wastewater application is correlated to the amount of nitrogen shich can be applied without adverse effects.

We suggest the final EIS evaluate other limiting factors of land application of effluent; such as, soil infiltration, toxic levels of micronutrients, and the slow rate of nutrient uptake during spring and fall which further shortens an already limited growing season.

6. Page 130; Soils:

We suggest the potential accelerated soil erosion which may occur during and after construction be recognized as an adverse impact in the final EIS.

7. Page 140; Water Quality:

We suggest the Routt County Soil Conservation District be added to the final EIS as a unit of state government, which provides assistance to landowners in reducing non-point source pollution.

8. We believe the final EIS should specifically address the following items:

   a. Will the project include provisions for controlling soil erosion during construction?

   b. Will sediment basins, mulching critical erosion areas, etc., be utilized during construction to minimize downstream sedimentation?

   c. Are there provisions for stockpiling topsoil during construction for later use in revegetation work?

   d. Discuss the erosion control measures that will be used to control soil erosion after construction activities are completed.

   e. Quantify the area that will be affected by accelerated soil erosion and discuss the environmental impacts caused by the resulting downstream sedimentation.

9. Page 147, Table XXVII:

This table includes the item, Land Treatment Credit (sale of crops).

We did not find any mention in the other sections of the draft EIS concerning the harvesting of crops from the effluent application areas.

Therefore, we suggest this topic be discussed throughout the various sections of the EIS. Specifically, we believe the final EIS should address the following items concerning this topic:

   a. When will the crops be harvested?

   b. What will be the method of harvesting?

c. Will the harvesting interrupt the application of effluent? If so, how will this affect the amount of effluent that can be applied during the growing season?

Thank you for the opportunity to review and comment on this environmental impact statement.

Sincerely,

M. D. Burdick
State Conservationist

cc: Council on Environmental Quality (5 copies)
R. M. Davis, Administrator, SCS; Washington, D.C.
Office of the Coordinator of Environmental Quality Activities, Office of the Secretary, USDA; Washington, D.C.

THE STATE HISTORICAL SOCIETY OF COLORADO
Colorado State Museum, 200 Fourteenth Avenue, Denver 80203

August 9, 1976

RECEIVED
AUG 12 1976
DIVISION OF
PLANNING

Mr. Philip H. Schmuck
Director
Department of Local Affairs
Colorado Division of Planning
500-C State Centennial Building
1313 Sherman Street
Denver, Colorado 80203

RE: Steamboat Springs Regional Service Authority
201 Wastewater Facilities Plan

Dear Mr. Schmuck:

We have reviewed the above Draft Environmental Statement and offer the following comments.

The historical and archaeological overview offered on pages 78-79 of the Facilities Plan establishes clearly that the Steamboat area is rich in historical associations which delineate the development of the west in general and of the northwest corner of the state in particular. Because of this historical heritage, we feel it is of great importance to identify any sites or structures eligible for entry into the National Register of Historic Places (FR 800.4) that may be affected by the construction or operation of the wastewater treatment plant at any of the proposed locations.

The Society has sent inventory information to both Wright-McLaughlin Engineers (letter May 20, 1975) and the Environmental Protection Agency (October 8, 1975). In both letters it was strongly urged that further information be gathered because the inventory for that area was incomplete. Since there is no inventory listed in the Plan, nor any mention of future surveys to inventory the study area, we again reiterate that compliance with the National Environmental Policy Act entails a description of any irreversible and irretrievable commitment (destruction) of resources (including historical and archaeological resources). Such a description would be preceded by an identification of any historical and archaeological resources that meet the eligibility requirements for entry into the National Register.

The description would be followed by a discussion of projected impacts upon such resources and also of plans devised to mitigate any adverse impacts to those found eligible for entry into the National Register.

Furthermore, in order to expedite review of Environmental Impact Statements both as they relate to the provisions of the National Environmental Policy Act and the National Historic Preservation Act, the Council on Environmental Quality has instructed federal agencies to combine compliance procedures for both wherever possible (38 FR 20544-20555, August 1, 1973).

If we can be of further assistance to you or if you have any questions, please contact Joy Farr at 321-7265.

FOR THE STATE HISTORIC PRESERVATION OFFICER

Sincerely,

James Edward Hartman

James Edward Hartman
Curator, Historic Preservation

STATE DEPARTMENT OF HIGHWAYS

JACK KINSTLINGER EXECUTIVE DIRECTOR

STATE OF COLORADO

DIVISION OF HIGHWAYS
E. N. HAASE
CHIEF ENGINEER

DISTRICT 3
R. A. PROSENCE
DISTRICT ENGINEER

P.O. BOX 2107—606 SO. 9TH ST. • GRAND JUNCTION, COLO. 81501 • (303) 242-2862

August 10, 1976

Mr. Richard L. Brown
Principal Planner
Colorado Division of Planning
1313 Sherman Street
Denver, CO 80203

Dear Mr. Brown:

This office has reviewed the Draft Environmental Impact Statement entitled Steamboat Springs Regional Service Authority 201 Wastewater Facilities Plan (Identifier A-95 76-123) and offer the following comments.

As noted on pages 96 and 97 of this document, the Division of Highways is beginning the process of right-of-way acquisition for the upgrading of U.S. 40 east of Steamboat Springs. Draft and Final Environmental/Section 4(f) Statements for the improvement of ten miles of U.S. 40 east and west of Steamboat Springs were prepared and approved in 1974 and 1975. Right of way will first be acquired east of Steamboat Springs, with construction due to begin during 1977; therefore, detailed crossing areas and collector line locations are of particular importance to us. It will be important to closely coordinate these two projects so that new highway improvements are not completed and immediately torn up during collector line placement or vice versa.

It might be noted here that any crossings of state highways or requests for new plant access points onto a state highway will require that the applicant obtain permits from our Craig Maintenance Office, 270 Ranney Street.

Another area of concern by this Division will be the location of the sewage plant treatment facilities, specifically the aeration lagoons. Location of the plant facilities and lagoons near U.S. 40, a major public highway, could present some esthetic as well as physical problems. Therefore, we would request that the sewage plant plans include a vegetative screening plan which would screen the plant facilities and lagoons from the traveling public. This office would expect to participate by reviewing plans for the location of treatment facilities, the plant landscaping plan, and highway crossing and lateral collector line details (on highway right of way) on the Steamboat Springs Wastewater Facilities as soon as they are developed and available.

We appreciate the opportunity to review this Draft Environmental Impact Statement. If this Division can assist with any additional information or assist in any other way, please contact this office.

Very truly yours,

R. A. PROSENCE
DISTRICT ENGINEER

By Laurence R. Abbott
Laurence R. Abbott
District Environmental Manager

LRA/bev

cc: File

bcc: ✓John A. Green - EPA, Denver
Capron
Atchison-Chocol
Prosence
Pyle-Combs
File

REGION XII

NORTH WEST COLORADO COUNCIL OF GOVERNMENTS

Holiday Center Building - Suite 200
P. O. BOX 737
FRISCO, COLORADO 80443
(303) 468-5445

EAGLE COUNTY
BASALT
EAGLE
GYPSUM
MINTURN
REDCLIFF
VAIL

GRAND COUNTY
FRASER
GRANBY
GRAND LAKE
HOT SULPHUR SPRINGS
KREMMLING

JACKSON COUNTY
WALDEN

PITKIN COUNTY
ASPEN

ROUTT COUNTY
HAYDEN
OAK CREEK
STEAMBOAT SPRINGS
YAMPA

SUMMIT COUNTY
BLUE RIVER
BRECKENRIDGE
DILLON
FRISCO
SILVERTHORNE

CONTROL

August 10, 1976

John A. Green, Regional Administrator
U.S.Environmental Protection Agency
1860 Lincoln St. - Suite 900
Denver, Colorado 80202

Dear Mr. Green:

Thank you for the opportunity to review the Draft Environmental Impact Statement for the Steamboat Springs Wastewater Facilities Plan. Our comments are as follows:

1. References to agricultural non-point source pollution should be phrased in terms of potential problems associated with agricultural management practices which may cause significant water quality problems. At this point there is not substantial enough information to indicate that any particular agricultural activities in the Yampa Basin cause existing water quality problems. The 208 Program is currently inventorying and will later assess the relative loadings and impacts from land management practices. The Routt County Soil Conservation District is currently under contract to identify significant water quality problems associated with agricultural practices and will recommend best management practices where appropriate. The institutional analysis of the 208 Program will later identify the appropriate individuals responsible for implementing these management practices if and when they are recommended by the Soil Conservation District.

2. With regard to the urban runoff problem identified in the Draft EIS, it should be referenced that the 208 Program will identify recommended control procedures, financial feasibility, financing requirements and management agencies for urban runoff control.

3. Reference to the biological conditions in the Yampa River places emphasis on the number of

(John A. Green continued)

benthic invertebrates present rather than their diversity. A study conducted by EPA in conjunction with the USGS during the fall of 1975 would provide a better data base for assessing the status of the biological community.

Thank you again for the opportunity to review the Draft EIS.

Sincerely,

Phil Overeynder
208 Coordinator

PO/js

COLORADO DEPARTMENT OF HEALTH
4210 E. 11TH AVENUE DENVER 80220 PHONE 388 6111
ANTHONY ROBBINS, M.D., M.P.A. EXECUTIVE DIRECTOR

August 10, 1976

Mr. Wes Wilson
EPA, Region VIII
1860 Lincoln
Denver, CO 80203

RE: Steamboat Springs EIS and Draft 201

Dear Wes:

We have just a few final comments on the Steamboat Springs EIS and 201 plan. Primarily, we want to both clarify and confirm our position as expressed at the meeting in Steamboat on July 23.

We concur with the need for seasonal ammonia limitations for Steamboat Springs as explained on page 2 of the meeting minutes you sent us. However, we will write the permit in terms of pounds of NH_3 rather than mg/l using plant design flows.

The meeting record also implies that all participants came to agreement that SO_2 dechlorination was necessary at Steamboat Springs. For the record, we would like to reiterate that we do not feel it is clearly necessary to provide this in light of the higher coliform limits and the performance of many similar installations without dechlorination in the State. Also, we continue to take issue with Tom Willingham's argument that it is incorrect to use the assimalitive capacity of the receiving stream in calculating the permissable chlorine residual. We will continue to write chlorine limitations in permits using the mass balance technique (instantaneous/complete mix) which does consider stream assimilative capacity.

Finally, it should be noted that our review of the EIS and Step I will not be complete until we have a chance to review the Financial Consolidation Plan as noted on page 3 of the meeting record.

Very truly yours,

FOR DIRECTOR, WATER QUALITY CONTROL DIVISION

Jon Scherschligt

Jonathan Scherschligt, P.E.
Planning Engineer
Water Quality Management Planning Section

JS/mb

cc: James Daber, Technical Services Section

COLORADO DEPARTMENT OF HEALTH

4210 E. 11TH AVENUE DENVER 80220 PHONE 388-6111

ANTHONY ROBBINS. M.D., M.P.A. EXECUTIVE DIRECTOR

July 19, 1976

RECEIVED
JUL 21 1976
DIVISION OF
PLANNING

Mr. Dick Brown
Colorado Division of Planning
Centennial Building
Denver, CO 80203

RE: DEiS Steamboat Springs RSA 201 Plan

Dear Mr. Brown:

The Colorado Department of Health has the following comments on the DEIS:

AIR POLLUTION CONTROL DIVISION

The DEIS does not address the impact of emissions discharged by the proposed project on ambient air quality in the vicinity of the plant site. Furthermore, no emissions inventory of expected concentrations of gaseous and other pollutants generated by the activity are identified in the document.

Appropriate predictive modeling techniques should also be selected and identified for use in the air quality impact analysis in the DEIS.

The major components of the facility are described (page 137) only in general terms and therefore specific rates of pollutant discharges cannot be determined. It is expected that a more definitive and detailed description of actual equipment selected will be made for the final EIS so that an adequate air quality impact assessment can be made.

The DEIS acknowledges TSP standards are already being violated from fugitive dust and fireplace sources. However, it is not expected that TSP will be a major pollutant discharged from the wastewater treatment facility proposed. From the general equipment described (page 137 and in Appendix B), it is anticipated that a permit for construction of this facility will be required from the Air Pollution Control Division to demonstrate compliance with applicable air pollution regulations.

The Division agrees with the statement made on page 77 that "ambient odor" will be the primary effect on air quality. However, the statement does not identify odor abatement measures to be taken to meet the odor requirements specified in Air Pollution Control Commission Regulation No. 2. The project developer should be reminded that he could be subjected to violation orders if odor emissions exceed regulation requirements at any time.

ENGINEERING AND SANITATION DIVISION

Page 31, last paragraph: The sentence starting "Concentration of iron and manganese ...Federal Register 1975" is not correct because iron and manganese are not listed in the Interim Primary Drinking Water Standards.

WATER QUALITY CONTROL DIVISION

The Water Quality Control Division reviewed the draft EIS earlier, and forwarded comments directly to EPA. Since all our earlier questions and concerns have subsequently been answered, those comments are not repeated here.

However, we noted on Table 1, page 6, that the wasteload allocations for NH_3 and Cl_2 are not specified. We are including allocations of 18.1 pounds NH_3 and 0.05 mg/l total residual chlorine in the permit for Steamboat Springs. These values should be displayed similar to the values for BOD.

Very truly yours,

FOR DIRECTOR, WATER QUALITY CONTROL DIVISION

Jonathan Scherschligt, P.E.
Planning Engineer
Water Quality Management Planning Section

JS/mb

cc: Mary Romero
Bob Siek

1876
Richard D. Lamm, Governor

Department of Local Affairs
Colorado Division of Planning
Philip H. Schmuck, Director

August 10, 1976

Mr. John A. Green
Regional Administrator
U. S. Environmental Protection Agency
Region VIII
1860 Lincoln Street
Denver, Colorado 80203

SUBJECT: Draft Environmental Impact Statement
Steamboat Springs Regional Service Authority,
201 Wastewater Facilities Plan

Dear Mr. Green:

The Colorado Clearinghouse has received and distributed copies of the above-referenced statement for review pursuant to the National Environmental Policy Act. Responses from the Colorado Department of Health and the Department of Highways are enclosed herewith.

In addition, the Division of Planning has the following comments:

1. We are extremely encouraged by the close coordination between the 201 Facilities Plan and the Routt County/Steamboat Springs Comprehensive Plan. The Statement's adjustments to the Gathers and Associates population projections are sound and provide a competent basis for wastewater planning. The Statement makes several references to the logical nature of the Comprehensive Plan and general community support for its concepts. However, no explanation is offered for why the Plan has not been formally adopted. Certainly adoption of the Plan by the Routt County Regional Planning Commission would greatly enhance confidence that the preferred Midway wastewater treatment site would not be used in a manner to promote haphazard and illogical development patterns.

2. The Statement apparently does not contemplate the construction of a connecting line from developments north of the Routt County STOL Airport. We agree that the extension of sewer service to that area could encourage development in conflict with the local Comprehensive Plan as stated on p. 132 of the Statement. Plans for a connector to that area, if they should become a part of the 201 program, should be carefully limited to service for the existing subdivisions of Elk River Estates and Deer Mountain Estates with minimal intervening branches.

3. The most serious question unanswered appears to be the selection and organization of a management vehicle for constructing and operating the proposed

615 Columbine Building, 1845 Sherman Street, Denver, Colorado 80203 (303) 892-2351

facility. The discussion beginning on p. 53 apparently considers only the consolidation of existing taxing districts. The same problem is currently being considered by the Pikes Peak Area Council of Governments in Colorado Springs concerning implementation of a 208 plan, and joint consultation with that entity might prove productive. Most of the attention in the Statement is focused on reconciling varied amounts of bonded indebtedness and other financial disparities. However, the form of the management vehicle is also a significant problem. Consolidation of districts is hampered by the statutory requirement (Section 32-4-122 CRS 1973) that lands within a single district be contiguous, and attempts to extend district boundaries to include the KOA Campground, Sleepy Bear Mobile Home Park and Steamboat II would undoubtedly encourage development contrary to the Comprehensive Plan. Even though the term "Regional Service Authority" has been used in Steamboat Springs, it is noted that legal service authority machinery is not available in this particular case unless the state legislature removes the current impediment requiring composition from parts of two counties (see Section 32-7-104 CRS 1973). It is possible that a suitable vehicle might be constructed contractually pursuant to Section 29-1-201 et seq. CRS 1973, except that private entities (KOA and Sleepy Bear) are involved and financing arrangements would be awkward at best. The most promising avenue seems to be investigation of a Metropolitan Sewage Disposal District (Section 32-4-501 et seq. CRS 1973) which would appear to circumvent the contiguous land requirement. Of course, financial disparities would still have to be resolved.

4. The Statement does not examine the impacts of summer land treatment during the late summer months on the maintenance of flows for irrigation, fishery, or aesthetic purposes. I would suggest that the high water loss accompanying spray irrigation and the slow return of alluvial water to the river should receive special attention in the Final EIS.

We appreciate the concise relevancy of this Environmental Impact Statement and thank you for the opportunity to comment on it.

Very truly yours,

Philip H. Schmuck
Director, State Clearinghouse

PHS/CGJ/vt
Enclosures

cc: Jim Monaghan, Assistant to the Governor for Natural Resources
Colorado Department of Health
Colorado Department of Highways
Routt County Regional Planning Commission

16-123

STATE OF COLORADO
Richard D. Lamm, Governor
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF WILDLIFE
Jack R. Grieb, Director
6060 Broadway
Denver, Colorado 80216 (826-1192)

August 12, 1976

RECEIVED
AUG 13 1976
DIVISION OF
PLANNING

Mr. Philip H. Schmuck, Director
Department of Local Affairs
Colorado Division of Planning
500-C State Centennial Bldg.
1313 Sherman St.
Denver, Colorado 80203

Dear Phil:

I have enclosed a copy of a memorandum from Wayne R. Seaman, Chief of our Fishery Research Unit, which states the position of the Colorado Division of Wildlife concerning Steamboat Springs Regional Service Authority 201 Wastewater Facilities Plan.

Sincerely,

P. T. Barrows

P. T. Barrows, Chief
Environmental Resources

PTB:lm
enclosure
cc: H. Sherman
G. Rogers
W. Seaman

DEPARTMENT OF NATURAL RESOURCES, Harris Sherman, Executive Director • WILDLIFE COMMISSION, Vernon C. Williams, Chairman
Thomas Farley, Vice Chairman • Sam Caudill, Secretary • Jean K. Tool, Member • Roger Clark, Member
Jay K. Childress, Member • Dean Hull, Member • Dean Suttle, Member

ivisional Correspondence Only

STATE OF COLORADO

DIVISION OF WILDLIFE

DEPARTMENT OF NATURAL RESOURCES

ENVIRONMENTAL RESOURCES SECTION

DATE: July 13, 1976

TO: P. T. Barrows

FROM: W. R. Seaman

The Yampa River is hurting from Steamboat Springs development. Scarcely any of the sewage plants are meeting state effluent standards.

The Yampa is already water quality limited for ammonia. This means either growth must be curtailed or tertiary treatment inaugurated. Land treatment with effluent used for irrigation looks possible here for the warmer months. Due to the cold winters, however a combination is indicated or reservoir winter storage would be needed.

I think we should support alternative IV with the summertime land treatment and the Midway site.

This is a good EIS.

dh

APPENDIX C

EPA RESPONSE TO COMMENTS

1. Health, Education and Welfare, Rulon Garfield - Regional Director

   Response: EPA appreciates HEW's comment and its conclusion that the alternatives have been adequately addressed.

2. Colorado Ute Electric Association, John J. Bugas - President

   Response: EPA appreciates support of Colorado Ute in its 201 project. This effort will benefit not only downstream water users but also the aquatic life of the Yampa River.

3. Army Corps of Engineers, George C. Weddell - Chief, Engineering Division

   Response: This project will not enter into Step 2 which is the detailed engineering design portion. In this phase provisions will be made so that any river crossings are designed to pass flood flows and that there is sufficient allowance for backfill, riprap or other flood protection means. The Step 2 design engineer will be required to contact your agency so that you are assured of adequate provisions.

   Regarding reference to the Section 404 permit requirement, EPA recommendations on this permit are set forth in Chapter VIII on Mitigating Measures. At such time that Step 2 is nearing completion and prior to Step 3 (actual construction), appropriate measures will be taken to comply with such permit requirements as the Corps and EPA deem necessary.

   Although every effort will be made to control construction sedimentation problems, it is likely that some short-term erosion will occur. However, EPA is satisfied that no long-term problems will result through proper mitigating measures.

4. U. S. Public Health Service, Richard O. Hayes - Chief, Water Resources Branch

   Response: EPA appreciates your comments with regard to potential disease transmission from the vectors Culex tarsalis and Aedes dorsalis. We have conducted soil tests since the printing of the draft EIS and have adopted an application rate of 29 inches per year. This rate is considerably less than the 3 to 7 foot range that was proposed in the draft EIS. We believe this new rate will minimize the possibility of pooling and insect breeding. Nonetheless, monitoring of the site will be made a condition of the grant so that pooling can be stopped if it is observed.

5. Federal Energy Administration, Dudley E. Faver - Regional Administrator

Response: EPA appreciates the specific comments by the Federal Energy Administration. The goal of this 201 project is to control harmful constituents of sewage plant effluent including ammonia and chlorine. EPA recognizes that the Yampa River is influenced by substantial nonpoint sources, however, until the 208 studies currently underway are completed, it is impossible to determine the likelihood of attaining A-1 stream status. The action proposed would be necessary even if the Citizens Advisory Committee had as its goal a B-1 class stream.

The Water Quality Control Commission may not change the B-1 status of the Yampa River, despite the desires of the Steamboat Springs Citizens Advisory Committee. Two of three historical violations at Milner are believed to be natural in origin, and implementation of A-1 standards would limit their allowable range even more.

The treatment of Steamboat's mineral springs would seem to be a waste of time and energy. Their contribution of salts increases background levels of salinity from about 280 to 370 mg. per 1 (ppm). These concentrations should not harm the ecological quality of the Yampa River. Additional studies by the USGS should clarify their impact, especially with regard to individual constituents added by the springs. These constituents are potentially more harmful than the total tonnage of salt added.

FEA's comment about the sulfur discharge from the mineral springs around Steamboat is well taken. Again it is intended to consider this source in the ongoing 208 studies, and therefore no action is contemplated under this Section 201 project.

6. U. S. Forest Service, S. H. Hanks - Deputy Regional Forester

Response: The population projection developed and used by the design engineer are felt to be quite realistic and allow for phased construction of sewage treatment facilities. Through phased construction, expansion would only occur as growth materialized. Based on all the comments and attitudes of local citizens involved in this project, it is concluded that the wastewater facilities themselves will not be a growth inducement. However, EPA recognizes that the new facilities will facilitate growth in the Steamboat Springs area. This growth places numerous demands on the community, including requirements for more potable water, which in turn could affect your agency. EPA continually stresses the importance of growth management with proper provision for needed utilities.

The effulent is to be applied to nearby farmland during summer. Although it would be desireable to use effulent in conjunction with strip mine reclamation, such a program is not contemplated because of the distances involved and the active interest already shown by nearby ranchers.

7. Department of Interior, John E. Raybourn - Special Assistant to Secretary

Response: EPA appreciates your concern for the historical and cultural factors of the proposed project. The final EIS contains evaluations of these concerns and refers to an archeological investigation that is currently being implemented (see the response to letter No. 12). The terrestrial environment of the project site has been extensively evaluated by Dr. John Marr and his students from the University of Colorado (Wright-McLaughlin Engineers, April 1976; see bibliography). This evaluation has not been included in the EIS because EPA believes it is not a central issue of the proposed project. Central issues are water quality, aquatic biology, agricultural soils, land use and financial condition of the districts.

Your comments on recreational use of the Yampa is a local concern that is handled by the city's Recreational Department. They have already developed a trail system, which is not readily used, and they are conducting a major effort to restore Howelsen Hill, the ski jump area. Your comments on threatend or endangered species have been implemented.

8. Routt County Regional Planning Commission, Daniel R. Ellison - Planning Administrator

Response: The draft environmental impact statement characterized the Yampa River as being in poor condition. This subjective statement contained on the summary sheet makes no inference as to the role agriculture plays in the quality of the Yampa River. EPA recognizes that only the ongoing 208 studies can adequately substantiate nonpoint source contribution to Yampa River quality. EPA regrets any misunderstanding of its characterization of the Yampa River. It is clear that the river is adversely impacted by sewage plant effluent which is the subject of this 201 project. It is also evident that there is a heavy sedimentation load. It is anticipated that the 208 studies will differentiate between natural erosion and runoff which is the result of man's activities.

The conclusions found later in the EIS, referring to agricultural practices, have been quantified by Dr. Robert W. Pennak of the University of Colorado. He investigated two areas along the Yampa River located one and two miles south of Steamboat Springs. Six to ten banks were examined at each area and they were judged to be either stable or unstable. Those banks that were labeled unstable were banks that experienced soil sloughing during the previous year. Based on this approach, Dr. Pennak found 61% of the banks were stable and 39% were unstable. Those banks that were labeled unstable existed in a condition that could contribute siltation to the river during future runoff events.

These conclusions have been supported by Dr. J. T. Windell at the University of Colorado. He floated the Yampa River, south of Steamboat Springs and also found evidence of unstable banks. Such observations have been photographed and could be provided to interested parties if requested.

EPA received several comments regarding the proposed application rate for the summertime land treatment program. Clearly, the rate selected will be a function of the land parcel to be used. Please refer to the final Facilities Plan for this project as those details have now been discussed in sufficient detail for Step 1 of this project.

Reference of the growing season in the Steamboat Springs area of 90 to 100 days was obtained from the draft comprehensive plan prepared by Charles Gathers and Associates. EPA notes that the 59 days pointed out in the Colorado Agricultural Handbook is for frost-free days and does not necessarily reflect the actual growing season. The final Facilities Plan does point out that provisions have been made to allow for a reasonable growing season.

Provisions will be made so that treatment areas will be adequately dried to allow harvesting. This will be accomplished through rotation of areas being irrigated. EPA appreciates notation of this element which had been considered in the original calculations, but was not mentioned in the initial Facilities Plan.

EPA notes the exitence of a comprehensive plan for the West Steamboat area. The principal of county-wide comprehensive planning is highly encouraged, particularly when effors are made to incorporate environmental and natural resource constraints in growth management policies.

The land use map prepared as part of the draft EIS indicated that the land adjacent to the existing lagoon is slated for light industrial. Reference to future residential development was meant to refer to buildout of the existing Riverside subdivision. EPA appreciates your comment about the approach pattern for the county airport and that locating the regional sewage plant at the existing location would be a consistent and desirable use of this land.

Wright-McLaughlin used peak day population estimates prepared by Weiner & Associates. This peak day figure represented capacity of all available facilities. The average of 30 busiest days was only included in the discussion and in the projection to add clarity and represent the active seasons of the year. In the population forecasts, it was concluded that new recreational population may be, to some degree, overlapped by coal related development. It is felt however, that they will tend to overlap such that there will tend to be a slight trade-off between development that does occur and the nature of new residents in the area.

The financial condition of several of the entities involved in this project was isolated as an issue in the draft EIS. Efforts have been completed to develop a financially sound means of securing the local share and this is reported in this final EIS.

EPA is most appreciative of the action taken by the Routt County Regional Planning Commission in passing a resolution regarding a plant site growth inducement. What growth occurs and where, is strictly a function of local regulatory action and approval. The strong position taken by the Commission assures EPA that by funding this project it will not create pressure or other situations which conflict with the goals of local land use agencies. In addition, EPA will condition the grant to SSRSA to limit new taps along the proposed interceptor (See Chapter VIII).

9. Federal Highway Administration, F. S. Allison

Response: Review and comment appreciated.

10. U. S. Department of Interior, Geologic Survey, Timothy Steele

Response: EPA appreciates your most extensive list of comments and has considered each of them for input into our final EIS. You will note that the final statement characterizes the chemical water quality as good and the aquatic biological environment as poor to fair. Appropriate statement and studies are provided to back up these contentions.

11. U. S. Soil Conservation Service, M. D. Burdick - State Conservationist

Response: EPA appreciates the time SCS has taken to review this impact statement. The final EIS does contain, at your suggestion, a soils map for the land treatment proposed. A misunderstanding apparent in the description of the land capability classification system has been corrected as part of this final EIS.

The third volume of the Facilities Plan discusses in detail the location size and drainage considerations associated with the land treatment site. This has been summarized in the final EIS and as was noted in the draft, was an unresolved issue at the time of the draft. EPA appreciates SCS pointing out the importance of making adequate provisions for wastewater application rates and underdrain systems if necessary.

Comments on nitrogen uptake of reed canary grass have been noted and have been considered in preparation for the final Facilities Plan. EPA agrees that the land treatment application systems and application rates have to be tailored to the specific parcel proposed and must take into account many factors including plant uptake, soil infiltration, drainage and needed time for haying operations. This criteria is addressed in the last volume of the Facilities Plan and in this final EIS.

It is recognized that during construction and just after soil erosion problems could occur, mitigating measures have been proposed and it is felt that the adverse impacts which may occur will be temporary in nature. Although short-term, these potential adverse impacts are now listed as such in the final EIS.

The Routt County Soil Conservation District has been added as a unit of state government dealing with nonpoint source pollution.

Step 2 of the Facilities Planning effort includes detailed engineering and development of specific procedures to be followed during actual construction, Step 3. EPA agrees that the items listed under Item 8 of the SCS letter, must be addressed; however it is felt that it is appropriate to do this as part of the Step 2 effort.

It is anticipated that prevailing methods used in the region for harvesting hay will continue to be used at the land treatment site. The final Facilities Plan provides for this operation. It is not contemplated that methods used will deviate from what is common practice in the region. In this sense harvesting will occur in August or as conditions dictate.

12. State Historical Society of Colorado, James E. Hartmann

Response: EPA recognizes that the limited information currently available in archaeology in the area is not adequate to consider right of way selection or the exact site of the plant as well as possibly recover any sites of archeological signigicance. Therefore a supplemental report on archeological signigicant sites is currently being prepared. Unfortunately, this report will not be completed in time to print as part of this final EIS. Copies of the report will be available by mid September 1977 and sent to interested parties upon request. The State Historical Preservation Officer will be contacted following his review of this report for his recommendation on mitigating measures for archaeological sites.

If archaeological artifacts are discovered during construction or plowing activities, these activities will be stopped. A qualified archaeologist should then be summoned to investigate the site. If the findings are significant, accomodations should be made to allow proper excavation and assessment. However, these accomodations should be done in such a manner that construction delays are minimized. EPA will also condition the Step 2 grant to SSRSA that construction activity include consideration for the results of this field survey of archaeological sites.

13. Colorado State Department of Highways, Laurence R. Abbott

Response: The only anticipated crossing of U.S. 40 would be about two miles west of Steamboat Springs, near the Steamboat 2. Plans to lay the collector across this section of highway will be coordinated with your Denver office and permits will be obtained from your Craig Maintenance Office. Since our recommended plant location should be obstructed from public view, we do not anticipate the need for a landscaping screen. However, landscaping will be employed around the completed plant in order to maximize its aesthetic appearance.

14. North West Colorado Council of Governments, Phil Overeynder

Response: EPA appreciates these comments and acknowledges that agriculture's contributions to nonpoint sources of pollution are not accurately known. However, the Routt County Soil Conservation District is not the first group to study the potential problem. Two professors from the University of Colorado have studied the situation and have concluded that agricultural practices do encourage river siltation, especially upstream from Steamboat Springs. Although additional studies by the District may mitigate the conclusion of these observations, they are included in the EIS for the record.

Your concerns for property delineating the function of the 208 process are appreciated and are reflected in the final EIS.

Your concerns for the biology discussion of the draft reflect the concerns of the USGS, which are handled in the previous response No. 10. Here, we acknowledge the diversity studies done by Eddy of EPA and Aimes of CSU, and we point out why they are not better or worse than previous studies done by Wentz of USGS and Pennak of CU. Each author uses slightly different methodologies that render direct comparisons difficult. However, all four studies contribute to our understanding of the biology of the Yampa River and are cited in the final EIS.

15. Colorado Department of Health, Jonathan Scherschligt

Response: EPA appreciates the support of the Colorado Water Quality Control Division for a seasonal ammonia limitation. The final EIS will include this limitation and cites specific loading rates. Our stand on dechlorination will remain the same despite relaxation of the fecal coliform standard. The SO_2 system is not capital intensive, representing less than 1% of the anticipated capital outlay, and it provides additional protection for the aquatic environment. Furthermore, it is believed that the cost of proving or disproving the need for such a system would represent more than the cost of the system itself.

Your concern for the financial condition of the districts is appreciated. The final EIS contains a report on their status and a recommendation on how to proceed.

Odorous hydrocarbons will periodically eminate from the plant site. There is no practical way to estimate these emissions as they would only occur during upset conditions. The Facilities Plan deliniates the equipment to be used in the new facility. No exhaust fans or stack emissions other than space heating are planned. A permit may be necessary to insure fugitive dust control during construction. Health Department officials will be contacted prior to Step 3 grant award. Selection of the proposed treatment technology considered the State's Odor Regulation No. 2 and compliance seems assured particularly at the Midway site with its land buffer.

EPA appreciates your correction of the statement regarding iron and manganese. It is deleted in the final EIS.

16. Colorado Division of Planning, Philip H. Schmuck

Response: Review and comment appreciated.

17. Colorado Division of Wildlife, P. T. Barrows

Response: EPA appreciates the support of the Colorado Division of Wildlife; we believe that the final EIS reflects your concerns.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION VIII
1860 LINCOLN STREET
DENVER COLORADO 80203

TO ALL INTERESTED GOVERNMENT AGENCIES, PUBLIC GROUPS AND INDIVIDUALS

The enclosed copy of the draft environmental impact statement (EIS) for the proposed wastewater treatment facility for the Steamboat Springs Regional Service Authority (Routt County, Colorado) is provided for your review and comment. Written comments on this EIS should be sent to the above address by August 9th in order to be considered for the final EIS.

The EIS analyzes the environmental impacts of constructing a new regional sewage treatment for the Steamboat Springs area. All alternatives, with the exception of the "no-action" alternative, combine the waste loads of the City of Steamboat Springs with six water and sanitation districts and two private developments. The recommended alternative uses a site two miles downstream of the existing city lagoons, is designed for ten years of reasonable growth, and uses a combination of in plant treatment and summertime application of effluent to meet water quality standards.

A public hearing on this EIS is scheduled to consider views of interested groups, agencies and individuals. Your attendence and presentation of your opinion on this matter is encouraged. The hearing will be held at the Yampa Electric Association Conference Room, 10th and Yampa Streets in Steamboat Springs, on Thursday, July 29, at 7:30 p.m.

John A. Green
Regional Administrator

THE DENVER POST
AFFIDAVIT OF PUBLICATION

STATE OF COLORADO ss.
CITY AND COUNTY OF DENVER

I, ESTHER M. RIDGEWAY, of said City and County of Denver, of lawful age, being first duly sworn on oath, depose and say:

That I am the ACCOUNTING DEPARTMENT SUPERVISOR of THE DENVER POST, INC., a Colorado corporation; that said company is the owner and publisher of the newspaper, THE DENVER POST; that I have personal knowledge of all the facts set forth in this affidavit; that said THE DENVER POST is a daily newspaper within the meaning of Chapter 109, Article I, Sections 1 to 8, inclusive, Colorado Revised Statutes of 1953, and amendments thereof; and that said newspaper had prior to January 1, 1936, and has ever since that date, been admitted to the United States mails as second-class matter, under the provisions of the Act of Congress of March 3, 1879, and amendments thereof; that said newspaper is printed and published daily and has its principal office and place of business in said City and County of Denver, and has a general public circulation in said City and County, and throughout the State of Colorado; that said newspaper has been so printed, published and circulated as a public daily newspaper of general circulation uninterruptedly and continuously during the period of more than six (6) months next prior to the first issue thereof containing the annexed legal notice and advertisement.

The annexed legal notice and advertisement was published on

JULY 27, 1976
(Dates)

(Dates)

in the regular Editions of said Newspaper, and that, therefore, said legal notice and advertisement were published in a Newspaper duly qualified for that purpose within the meaning of said above mentioned and all other relevant Statutes and Acts of the General Assembly of the State of Colorado.

Esther M Ridgeway

Subscribed and sworn to before me this 6th day of AUGUST A. D. 19 76

My commission expires FEBRUARY 13, 1977

Witness my hand and notarial seal.

Notary Public.

LEGAL NOTICE AND ADVERTISEMENT

NOTICE OF CHANGE OF PUBLIC HEARING ON DRAFT ENVIRONMENTAL IMPACT STATEMENT ON PROPOSED WASTEWATER TREATMENT FACILITY FOR THE STEAMBOAT SPRINGS REGIONAL SERVICE AUTHORITY.

Notice is hereby given that the public hearing previously scheduled for July 29, 1976, in Steamboat Springs, Colorado, by the U. S. Environmental Protection Agency to receive comments on the draft environmental impact statement for the proposed wastewater treatment facility for the Steamboat Springs Regional Service Authority (Routt County, Colorado), has been rescheduled at the request of the City of Steamboat Springs. The new hearing date is Wednesday, August 4, 1976, in Steamboat Springs, Colorado, at the Routt County Courthouse, District Courtroom at 7:30 p. m.

The comment period has been extended to August 9, 1976, for persons interested in submitting written comments for incorporation into the hearing record.

Class.-7

THE ROCKY MOUNTAIN NEWS

DENVER, COLO.

PUBLISHER'S AFFIDAVIT

City and County of Denver, }
STATE OF COLORADO, } ss.

Mel G. Weble, being of lawful age and being first duly sworn upon oath, deposes and says:

That ...he is the Credit Manager of The Rocky Mountain News, a daily newspaper of general circulation published and printed in whole or in part in Denver, in the County of Denver and State of Colorado, and that said newspaper was prior to and during all the time hereinafter mentioned duly qualified for the publication of legal notices and advertisements within the meaning of an Act of the General Assembly of the State of Colorado, approved April 7, 1921, as amended and approved March 30, 1923; and as amended and approved March 5, 1935, entitled "An Act concerning Legal Notices, Advertisements and Publications and the fees of printers and publishers thereof, and to repeal all acts and parts of acts in conflict with the provisions of this Act" and amendments thereto:

That the notice of which the annexed is a true copy, was published in the said newspaper to wit; (dates of publication)

July 28, 1976

Subscribed and sworn to before me this 30 day

of July, A. D. 19 76

Notary Public.

My commission expires 11 14 77

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